

# Complete experimental rovibrational eigenenergies of HCN up to 6880 $\text{cm}^{-1}$ above the ground state

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The [H,C,N] molecular system is a very important model system to many fields of chemical physics and the experimental characterization of highly excited vibrational states of this molecular system is of special interest. This paper reports the experimental characterization of all 3822 eigenenergies up to 6880  $\text{cm}^{-1}$  relative to the ground state in the HCN part of the potential surface using high temperature hot gas emission spectroscopy. The spectroscopic constants for the first 71 vibrational states including highly excited bending vibrations up to  $\nu_2 = 10$  are reported. The perturbed eigenenergies for all 20 rotational perturbations in the reported eigenenergy range have been determined. The 11 070 eigenenergies up to  $J = 90$  for the first 123 vibrational substates are included as supplement to this paper. We show that a complete *ab initio* rovibrational analysis for a polyatomic molecule is possible. Using such an analysis we can understand the molecular physics behind the Schrödinger equation for problems for which perturbation theoretical calculations are no more valid. We show that the vibrational structure of the linear HCN molecule persists approximately up to the isomerization barrier and only above the barrier the accommodation of the vibrational states to the double well structure of the potential takes place. © 2011 American Institute of Physics. [doi:10.1063/1.3598942]

## I. INTRODUCTION

The [H,C,N] molecular system is a very important model system to many fields of chemical physics and the experimental characterization of highly excited vibrational states of this molecular system is of special interest. The isomerization reaction  $\text{HCN} \rightleftharpoons \text{HNC}$  is one of the simplest models of a chemical reaction and one of the prototype model systems used for the study of unimolecular reactions.<sup>1–15</sup> This system is important because there is an overlap between the two basic scientific “tools” that we can use to gain a fundamental understanding on the isomerization process on a full quantum mechanical basis: It is possible to do high-level *ab initio* theoretical calculations (only 17 particles), and high resolution spectroscopic data can be obtained for highly excited vibrational states. Regarding the isomerization reaction one of the key questions is how the isomerization manifests itself in the vibration-rotation eigenenergy spectrum of the HCN and HNC molecules. The spectroscopic signature describes how the wave functions of the two isomers H-CN and CN-H located in two different minima merge step by step to a single delocalized wave function<sup>16</sup> corresponding to a single “combined”  $\text{H}_{0.5}\text{-CN-H}_{0.5}$  molecule.

This work together with the previous papers<sup>18–21,89</sup> is the first step in elucidating the physics behind this fundamental process. We want to understand how the excitation of the vibrational angular momentum and/or excitation of the rotation of the polyatomic molecule interacts with the bending excitation along the isomerization<sup>22</sup> (for a comparison of the [H,C,N] molecular system to the other two major model molecules acetylene<sup>23–29</sup> and HCP<sup>30–32</sup> studied so far

for the structure of the highly excited rovibrational states see Ref. 18).

This work completes the spectroscopy of the HCN molecule at low and medium rovibrational excitation. In contrast to HNC, for which only a few rovibrational states have been measured before, the analysis of the HCN eigenenergies presented here extends the work of many spectroscopists.<sup>33–75</sup>

The first infrared spectra of HCN were recorded by Burmeister<sup>33</sup> in 1913. He used a prism spectrometer equipped with mirrors which could resolve the P and R branch structure of the absorption bands. With three different types of prisms, he detected five different bands in the wavenumber region 1  $\mu\text{m}$  to 22  $\mu\text{m}$ . He assigned three of the five bands to HCN: the “twin bands” at 13.60  $\mu\text{m}$ /14.33  $\mu\text{m}$  ( $\nu_2$  at 700  $\text{cm}^{-1}$ ), the band at 3.04  $\mu\text{m}$  ( $\nu_1$  at 3300  $\text{cm}^{-1}$ ) and finally the band at 4.77  $\mu\text{m}$  ( $\nu_3$  at 2100  $\text{cm}^{-1}$ ). He mistakenly accredited the other two bands to impurities.

From the beginning, overtone spectroscopy played an important role in molecular spectroscopy. HCN was one of the six polyatomic molecules against which Hettner<sup>34</sup> could test his theory on molecular vibrations. In 1920 Kratzer<sup>35</sup> tried to interpret the rotationally resolved spectra of  $\text{H}_2\text{O}$ , HF, HCl, and HBr. He assigned the two unassigned bands of Burmeister as the third and fourth  $\nu_2$  overtones. This wrong assignment was based on the accidental concurrence of  $3\nu_2$  with  $\nu_3$  and  $4\nu_2$  with  $\nu_3 + \nu_2$ , respectively. Had the assignment of Kratzer been correct, HCN would have been the only molecule with a proven third and fourth overtone at that time. For this reason there was an extraordinary interest in the HCN absorption spectra, and the spectra were remeasured 1924 by Barker.<sup>36</sup> He did not find any new bands but he could specify two band centers. He pointed out the probability that the bands assigned

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by Kratzer may be combination bands. The first rotationally resolved HCN spectra have been recorded in 1931 by Badger and Binder<sup>37</sup> in the wave number region between 14000 cm<sup>-1</sup> and 10800 cm<sup>-1</sup>. They showed for the first time that HCN is a linear molecule. They determined the three fundamental vibrational frequencies and assigned all of the eight known bands correctly. In the same year Brackett and Liddel<sup>38</sup> (and a year later Choi and Barker<sup>39</sup>) detected new combination bands. The amount of vibrational data available for HCN allowed Adel and Barker<sup>40</sup> to set up the dependence of the band centers on the vibrational quantum numbers for the 16 known bands. With the development of more sensitive infrared grating spectrometers and with the increase of the resolution of the recorded spectra, more and more HCN overtones and combination bands have been measured.<sup>41-56</sup> The work of Lehmann *et al.*<sup>57</sup> is the starting point for experiments designed to record spectra for the detection of the highly excited rovibrational states of the [H,C,N] molecular system.<sup>58-74</sup> Over time the number of the detected band centers increased steadily. The sensitivity of all these experiments regarding the detection of highly excited bending states and highly excited rotational states was relatively low so that each work described only a small part of the overall rovibrational eigenenergy structure. The hot gas molecular emission (HOTGAME) spectroscopy changed this situation and allowed to record transitions between highly excited bending states.<sup>75</sup> To allow the analysis of bands between even higher excited states in a dense emission spectrum the new interactive spectrum analysis program SyMath was implemented in the Mathematica<sup>TM</sup> computer algebra system with an easy-to-use user interface system.<sup>17</sup> The analysis of the spectra reported in this paper has been done using the SyMath spectrum analysis program.

The main purpose of this work is not to report new vibrational subband centers but to close the gaps in the existing relative eigenenergy list of this molecular system up to excitation energies of 6880 cm<sup>-1</sup>.

New rotational constants for the ground state and for all three fundamental vibrational states with  $J_{max} = 81, 69, 77, 86$  are reported. The rotational constants reported previously<sup>70,75</sup> describe the rotational substates up to  $J_{max} = 60, 60, 48, 49$ . For the majority of polyatomic molecules it is not unusual to report high resolution spectra with rotational excitations of  $J = 80$  or higher. Due to the high rotational constant of the relatively light HCN molecule, excitations with  $J = 80$  reported here correspond to very high rotational excitation energies (ca. 10 000 cm<sup>-1</sup>) of the same order of magnitude as chemical excitation energies. The  $J(J + 1)$  dependence of the rotational eigenenergies implies that for HCN at such high  $J$  even small improvements of the highest rotational eigenstate detected in the experiment  $J_{max}$  correspond to a significantly improved sensitivity of the experiment. Here an overall sensitivity must be considered: the interplay of gas temperature, sensitivity of the HOTGAME experimental setup, and the ability of the spectrum analysis program to identify the very weak peaks in the dense spectrum. On the energy scale the improvements in  $J_{max}$  reported here for the fundamental bands correspond to an excitation energy of 2000 cm<sup>-1</sup>.

The last work reporting pure bending states was reported in Ref. 75 using the authors' first generation HOTGAME spectra. The analysis was done using peaklists with a relatively low precision resulting in less accurate highly excited states than reported in this work. The initial motivation for this work was the necessity to improve the spectroscopic constants reported in Ref. 75 for the bending states due to the overlap of  $J > 50$  HCN bending transitions with the HNC bending transitions. The accuracy of the low  $J$  states reported previously should be similar to the accuracy of the states reported here, for the states with  $J > 40$  the accuracy of the states reported in this work are substantially improved. New highly excited bending states reported here are the 09<sup>3</sup>0 and 0 10<sup>0</sup> 0 states. The analysis of the  $\nu_2 = 10, 11, 12$  bending substates present in the HOTGAME spectrum is in progress.

Transitions regarding the 1 $\nu_2$ 0 states have been reported up to  $\nu_2 = 4$  by Maki *et al.*<sup>70</sup> The analysis has been extended up to  $\nu_2 = 5$  including the 15<sup>1</sup>0, 15<sup>3</sup>0, 15<sup>5</sup>0 states and for the states up to  $\nu_2 = 4$  the highly excited rovibrational states have been determined. For the  $\nu_2 = 4$  the  $l = 0, 2, 4$  substates, for example, the range of experimentally characterized states have been extended from  $J_{max} = 20, 20, 13$  to  $J_{max} = 74, 76, 78$ .

Transitions regarding the 0 $\nu_2$ 1 states have been reported by Maki *et al.*<sup>75</sup> up to  $\nu_2 = 5$  with  $J_{max} = 30$ . All substates from  $\nu_2 = 0$  up  $\nu_2 = 5$  have been extended to higher  $J_{max}$  (e.g.,  $J_{max} = 50$  for the  $\nu_2 = 5$  states). New vibrational states reported here are the four vibrational substates with  $\nu_2 = 6$ .

The 0 $\nu_2$ 2 states up to  $\nu_2 = 3$  reported in this work have been reported previously by Maki *et al.*<sup>70</sup> This work extends the previous results by reporting about twice as much experimentally characterized rovibrational states. Transitions regarding the 0 $\nu_2$ 3 state have been assigned in the HOTGAME spectra; the fit results for these transitions do not improve the state constants published in the Ref. 70.

## II. EXPERIMENTAL DETAILS

To record the emission spectra of small molecules, an emission experiment at the molecular spectroscopic laboratory of the Justus-Liebig-University in Giessen was designed. With the emission apparatus highly excited states of H<sub>2</sub>O,<sup>76-78</sup> HCN,<sup>79-81</sup> and HNC<sup>18,19</sup> isotopologues have been successfully measured and analyzed. The implementation of the emission experiment is described in detail in a previous paper<sup>17</sup> to which the reader is referred for details.

This work reports the assignment of the HCN emission lines using the spectra reported in a previous work.<sup>18</sup> For the sake of completeness a brief description of the emission spectra follows (see Figure 1 for an overview of the measured spectra). To record the emission spectrum at 1576 K in the bending wavenumber region a 900 mm cell made of Al<sub>2</sub>O<sub>3</sub> was used. The cell was fitted with CsI windows. The windows and the ends of the cell were kept at room temperature by water-cooled copper collars. 550 mm of the cell was placed in an oven that could be heated to 1600 K. The length of the cell outside the oven on the side where the molecular emission was collected was only 120 mm to minimize the self-absorption and temperature inhomogeneity effects on the

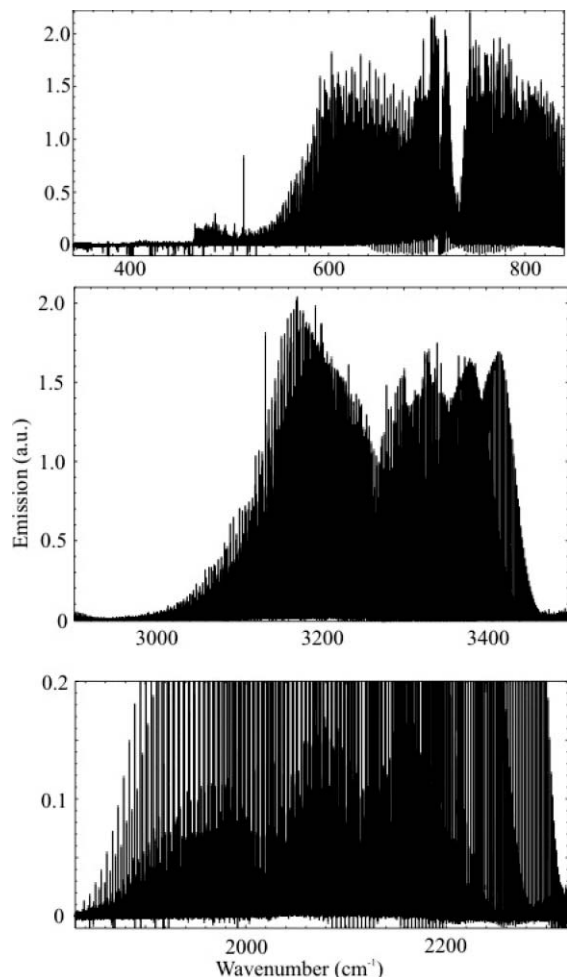


FIG. 1. Overview of the measured emission spectra.

emission line shapes. This is the minimum distance required by the cooling collars to lower the cell from 1600 K to room temperature. The resolution of the Bruker IFS 120 HR spectrometer was set to  $0.005 \text{ cm}^{-1}$  and the  $3.5 \mu\text{m}$  Mylar beam-splitter with the liquid helium cooled Ge:Cu far infrared quantum detector was used. Unfortunately the continuous time to record the HCN/HNC emission spectra was limited because the cell was not completely vacuum tight and the HCN sample slowly decomposed in the alumina cell. The spectrum was recorded by averaging the scans from three different measurements. The emission cell was refilled for each measurement with 11, 11, and 10 Torr pure HCN, respectively. To record the emission spectra in the CN and HC stretching regions, respectively, a specially designed one-meter-long quartz cell with 50 mm inner diameter was used. The cell was fitted with  $\text{CaF}_2$  windows. The windows were held at room temperature by water-cooled jackets at each end of the cell. The central part of the cell was enclosed in an electrically heated commercial furnace yielding a heated region of 600 mm in length at up to 1480 K. Both spectra were recorded using an InSb quantum detector. The spectrum recorded for the HC stretching region is the average of two measurements: 1120 scans recorded at 1423 K and 560 scans recorded at 1463 K. Background spectra recorded for each measurement were used to extract the Planck emission background from the single beam

spectrum. The intensity of each spectrum has been corrected by dividing the background-corrected spectrum by the appropriate optical filter transmission curve.

### III. DATA ANALYSIS

The linear HCN molecule has three normal modes  $\nu = \nu_1, \nu_2, \nu_3$ , two stretching vibrations of  $\Sigma^+$  symmetry, and a bending mode of  $\Pi$  symmetry:  $\nu_1$  is the HC stretch at  $3311.47 \text{ cm}^{-1}$ ,  $\nu_3$  is the CN stretch at  $2096.84 \text{ cm}^{-1}$ , and  $\nu_2$  is the degenerate bending mode at  $711.97 \text{ cm}^{-1}$ . The rovibrational eigenstates are labeled using the quantum numbers of the Wang symmetrized basis functions  $|v, l, J, (e/f)\rangle$ : the vibrational quantum numbers  $\nu = \nu_1, \nu_2, \nu_3$ , the vibrational angular momentum quantum numbers  $l$  and  $e/f$ , and the end-over-end rotational quantum number  $J$ . We use the labels  $e$  and  $f$  as the possible values of a symbolic quantum number  $e/f$  labeling the eigenvalues. For a linear molecule the vibrational angular momentum  $l$  is the only contribution to the axial component of the angular momentum. The vibrational angular momentum is equal to the absolute value of the signed quantum number  $k$  in the symmetric top basis functions  $l = |k|$ .

In the analysis presented, rovibrational term values are given by the eigenvalues of the Hamiltonian matrices<sup>70</sup> defined in the symmetric top basis  $|v_1, \nu_2, k, \nu_3, J\rangle$  with the diagonal matrix elements

$$\begin{aligned} \langle v_1, \nu_2, \nu_3, k, J | \frac{\mathbf{H}}{hc} | v_1, \nu_2, \nu_3, k, J \rangle \\ = G_{\nu_2} + B_v[J(J+1) - k^2] - D_v[J(J+1) - k^2]^2 \\ + H_v[J(J+1) - k^2]^3 + L_v[J(J+1) - k^2]^4 \end{aligned} \quad (1)$$

and with off-diagonal matrix elements

$$\begin{aligned} \langle v_1, \nu_2, \nu_3, k, J | \frac{\mathbf{H}}{hc} | v_1, \nu_2, \nu_3, k \pm 2, J \rangle \\ = \frac{1}{4}(q_v - q_{vJ}J(J+1) + q_{vJJ}J^2(J+1)^2 \\ + q_{lv}(k \pm 1)^2)\sqrt{(v_2 \mp k)(v_2 \pm k + 2)} \\ \times \sqrt{[J(J+1) - k(k \pm 1)]} \\ \times \sqrt{[J(J+1) - (k \pm 1)(k \pm 2)]} \end{aligned} \quad (2)$$

and

$$\begin{aligned} \langle v_1, \nu_2, \nu_3, k, J | \frac{\mathbf{H}}{hc} | v_1, \nu_2, \nu_3, k \pm 4, J \rangle \\ = \frac{\rho_v}{16}\sqrt{(v_2 \mp k)(v_2 \pm k + 2)(v_2 \mp k - 2)} \\ \times \sqrt{(v_2 \pm k + 4)[J(J+1) - k(k \pm 1)]} \\ \times \sqrt{[J(J+1) - (k \pm 1)(k \pm 2)]} \\ \times \sqrt{[J(J+1) - (k \pm 2)(k \pm 3)]} \\ \times \sqrt{[J(J+1) - (k \pm 3)(k \pm 4)]}. \end{aligned} \quad (3)$$

The analysis program uses the Wang symmetrization to factorize the matrices in e and f matrices. The e and f matrices are diagonalized separately and the eigenvalues are labeled as  $E(v_1, v_2, l, v_3, J, e)$  and  $E(v_1, v_2, l, v_3, J, f)$ , respectively.

The analysis of the spectra has been done in four main consecutive steps. First of all the rotational eigenenergies of the vibrationless state  $E_{0,J}$  have been determined in a global fit of the three fundamental bands with the 000 – 200 band.<sup>17</sup> In this fit both the lower and upper levels have been adjusted. For a few low  $J$  transitions badly disturbed by self-absorption effects the transition wavenumbers have been fixed to the values reported for absorption measurements.<sup>75</sup> The eigenenergies of the vibrationless state  $E_{0,J}$  determined in this analysis have been fixed in all consecutive analysis steps.

It was necessary to include the  $L_v$  centrifugal distortion constant for all these states to reproduce the measured transitions. The analysis of the 000 – 200 band was performed in a previous paper.<sup>17</sup> For the weakest 12 transitions with  $J > 64$  detected in that near infrared emission spectrum was not possible to fit the line positions to a model using only the  $H_v$  centrifugal distortion constant. The difference between predicted and measured line positions was in the order of many linewidths. At that time it was not possible to improve the analysis using the  $L_v$  centrifugal distortion constant, the ground state eigenenergies fixed in the analysis were known only up to  $J = 60$  and only R branch transitions have been assigned. A similar problem was observed during the analysis of each fundamental transition reported in this work. Including the  $L_v$  constant in the global fit of the three fundamental transitions with the 000 – 200 band the fitted constants reproduced all transitions within the measurement accuracy. The fact that transitions from four different spectra were included in the fit and all four constants fitted to approximately  $-8 \times 10^{-17} \text{ cm}^{-1}$  convinced the author that the constants determined are not fitting artifacts. There are no previous reports regarding the  $L_v$  centrifugal distortion constant for HCN, the order of magnitude and the sign of the constant were unknown. Later in the analysis it was possible to fit the  $L_v$  centrifugal distortion constant for many combination bands; even a rough dependence of this constant with the vibrational quantum number could be determined: the constants magnitude is increasing slightly with the vibrational excitation. In the analysis of the highly excited vibrational states this parameter has not been fixed to the value that it can be calculated using the vibrational quantum number dependence, it was fixed to values having the order of magnitude of the constants determined for the fundamental states.

The second step was the global fit of the all far infrared transitions involving the first five bending excitations. From this fit resulted 77 highly accurate spectroscopic parameters for the HCN lower bending states describing the rotational structure with measurement accuracy up to  $J = 70$ .

The third step was the analysis in which the 060 rovibrational bending states have been determined. This was the most complicated step in the analysis, especially the deperturbation of the 06<sup>0</sup> state highly perturbed by a local Coriolis resonance. In this step not only the far infrared transitions but also all other transitions which involve the 060 sublevels have been included in a single global fit. The eigenenergies

determined for the 060 sublevel reproduce the near infrared spectra with the measurement accuracy, for the far infrared spectra the accuracy is within a linewidth.

The last step was the analysis of all other transitions reported in this work. In each fit the eigenenergies of the lower levels have been fixed. Only the bands with the highest accuracy and  $J_{max}$  have been used in the fit. To include the transitions with the highest  $J$  it was necessary to deperturb many states perturbed by Coriolis resonances. In such cases up to five different bands have been used to determine the peaks corresponding to the perturbed states. This was very difficult in the case of weak transitions in spectral regions with high density of transitions. Different possible perturbed states have been considered until the transitions calculated for the selected perturbed state could be assigned in all bands. Such an analysis allowed the assignment of the high  $J$  peaks after the local perturbation.

Tables SI-SIX (see supplementary material<sup>82</sup>) list the transitions analyzed in this work. A large number of bands observed in the emission spectra are not listed in the tables. These bands have only been simulated in the analysis, and the predicted intensity and position values have been used to simulate the line shapes used in the deconvolution procedure described in Ref. 17. Through the deconvolution procedure the precision of the already analyzed bands increases as the analysis advances; only for a few bands the fits have been redone at the end of the analysis for the final results reported.

The analysis of the state 06<sup>2</sup>1 is not complete. For this band only the  $e$  components have been assigned in the far infrared spectrum at very low intensity level. The peaks form a series and the rotational constant is similar to the predicted one. It was not possible to confirm the assignment using the simulated very weak  $\Delta v_2 = 3$  bending band or the 16<sup>2</sup>1 – 06<sup>2</sup>1 combination band. For the  $f$  states local Coriolis perturbations are expected at low  $J$ ; the assignment of the very weak peaks in the dense emission spectrum due to such perturbations may not be possible. For all other states assignment errors can be excluded due to interplay of the local perturbations on the energy scale. Many of the states have been fixed as lower states in the analysis of the 1 $v_2$ 0 – 0 $v_2$ 0 band series up to  $v_2 = 8$  and in the analysis of the 1 $v_2$ 1 – 0 $v_2$ 1 band series up to  $v_2 = 6$ .<sup>21</sup>

#### IV. VIBRATIONAL AND ROTATIONAL CONSTANTS

In the analysis, the constants  $G'_{vz}(v, l)$ ,  $B'_v(v, l)$ ,  $D'_v(v, l)$ ,  $H'_v(v, l)$ ,  $L'_v(v, l)$ ,  $q'_v(v)$ ,  $q'_{vJ}(v)$ ,  $q'_{vJJ}(v)$ ,  $\rho'_v(v)$ , and  $q'_{lv}(v)$  of the Hamiltonian matrix (Eqs. (1)–(3)) have been fitted to the transition wavenumbers. The spectroscopic constants obtained for the first 71 vibrational states of HCN are given in Tables I and II and as supplementary material.<sup>82</sup> For the states with  $v_2 = 2$  the constants  $\rho_v(v)$  and  $q_{lv}(v)$  have been estimated. For estimated constants the standard deviation is not given.

The HCN vibrational levels  $G_{vz}(v, l)$  fitted in the analysis are the vibrational term parameters relative to the ground state term value<sup>17</sup>  $T_0 = 3479.23 \text{ cm}^{-1}$  of the diagonal matrix element

$$G_{vz}(v, l) = G_v(v, l) - T_0.$$



TABLE I. State term value matrix constants in  $\text{cm}^{-1}$ . The uncertainty in the last digits (standard deviation) is given in parentheses. Values that do not have any uncertainty are calculated values and have been fixed in the fit.

Nr.	State	$T_{v(J=0)}$	$G_{v_2(v, l)}$	$B_v$	$D_v \cdot 10^6$	$H_v \cdot 10^{12}$	$L_v \cdot 10^{17}$	$q_v \cdot 10^3$	$q_{v,J} \cdot 10^8$	$q_{v,J} \cdot 10^{12}$	$\rho_v \cdot 10^8$	$q_{v,J} \cdot 10^4$	$J_m$
1	00 <sup>0</sup>	0.00	0.00000(9)	1.478222943(43)	2.91132(14)	3.663(73)	-9.37(96)						81
2	01 <sup>1</sup>	711.97	713.461373(22)	1.481773413(51)	2.97808(2)	4.172(4)	-8.55(19)	7.4876209(430)	8.8480(32)	1.288(5)			77
3	02 <sup>0</sup>	1411.41	1411.413450(30)	1.485828689(84)	3.04790(5)	5.252(8)	-6.06(50)	7.5956814(188)	9.3201(26)	1.397(4)	-1.8400	0.08311(11)	69
4	02 <sup>1</sup>	1426.52	1432.469904(27)	1.484997857(68)	3.04137(3)	4.323(6)	-8.62(36)						70
5	00 <sup>1</sup>	2096.84	2096.845547(28)	1.468143474(71)	2.91776(4)	3.819(6)	-11.70(45)	7.7091638(243)	9.8695(22)	1.600(4)	-1.9000(50)	0.07746(43)	69
6	03 <sup>1</sup>	2113.45	2114.940101(30)	1.489575692(81)	3.11494(9)	6.150(10)	-5.27(54)						72
7	03 <sup>0</sup>	2143.75	2157.151668(32)	1.487869361(83)	3.10003(9)	3.999(8)	-9.02(51)	7.8242919(249)	10.3959(24)	1.743(5)	-1.9877(41)	0.08199(35)	63
8	04 <sup>0</sup>	2802.95	2802.958744(43)	1.493867683(128)	3.18976(13)	9.713(20)	-30.91(166)	7.4822590(1780)	8.9373(128)	1.488(21)			69
9	01 <sup>1</sup>	2805.58	2807.053602(109)	1.471573442(205)	2.98254(10)	4.060(15)	-8.87(90)						70
10	04 <sup>1</sup>	2818.17	2824.147565(32)	1.492986027(90)	3.17545(7)	6.062(14)	5.22(79)						68
11	04 <sup>0</sup>	2863.78	2887.627064(36)	1.490361234(98)	3.15496(13)	3.571(14)	-19.13(80)					0.08199(35)	86
12	10 <sup>0</sup>	3311.47	3311.477086(88)	1.467798587(117)	2.88581(4)	3.722(4)	-8.50(16)	7.9431230(1360)	10.8073(118)	1.321(28)	-1.5133(290)	0.02980(252)	64
13	05 <sup>1</sup>	3495.14	3496.611989(70)	1.497839553(453)	3.27252(132)	8.070(102)	-5.00	7.5753500(2610)	9.2198(210)	1.359(40)	-1.7900	0.08280	64
14	02 <sup>1</sup>	3502.12	3502.121103(85)	1.475491522(511)	3.05244(39)	7.070(74)	-39.24(433)						63
15	02 <sup>1</sup>	3516.87	3522.770697(68)	1.474677035(247)	3.04499(17)	4.514(31)	-12.68(228)						61
16	05 <sup>0</sup>	3525.64	3539.136969(55)	1.496029678(250)	3.23371(21)	3.837(105)	-10.00						49
17	05 <sup>0</sup>	3586.69	3624.011213(73)	1.492442059(302)	3.17334(134)	3.556(106)	-15.00	7.6066380(700)	9.5175(34)	1.609(4)			83
18	11 <sup>1</sup>	4004.16	4005.633722(31)	1.471560328(54)	2.95828(2)	4.554(2)	-9.37(12)						57
19	00 <sup>2</sup>	4173.07	4173.070913(183)	1.458004019(559)	2.92271(44)	3.432(96)	-11.70	8.0694380(1390)	11.6050(118)	1.868(34)	-1.8501(172)	0.05592(146)	61
20	06 <sup>0</sup>	4174.60	4174.608607(102)	1.502397631(707)	3.33640(139)	9.950(175)	-3.00	7.6723010(2790)	9.3398(199)	0.959(35)	-1.8825(418)	0.07522(353)	62
21	06 <sup>1</sup>	4189.97	4195.979578(75)	1.501468226(465)	3.32077(104)	8.109(113)	-5.00						64
22	03 <sup>1</sup>	4201.21	4202.684288(101)	1.479114052(450)	3.12473(79)	10.536(57)	-63.97(572)						59
23	03 <sup>1</sup>	4230.82	4244.134559(114)	1.477425273(438)	3.09952(71)	2.506(58)	-9.00	7.7264260(360)	9.9980(33)	1.724(3)	-1.0850	-0.00752(36)	82
24	06 <sup>1</sup>	4236.01	4260.002988(65)	1.498682088(295)	3.28076(34)	4.200(108)	-9.00						83
25	06 <sup>0</sup>	4312.62	4366.411318(88)	1.494082018(364)	3.21742(126)	1.020(107)	-10.00						56
26	12 <sup>0</sup>	4684.30	4684.309975(60)	1.475839197(148)	3.04399(6)	6.217(7)	-10.41(36)						82
27	12 <sup>1</sup>	4699.20	4705.109033(43)	1.474996635(95)	3.02240(4)	4.852(4)	-9.88(24)						83
28	07 <sup>1</sup>	4856.74	4858.194861(171)	1.506641159(1212)	3.33975(502)	-3.633(633)	-3.00	8.2019330(2470)	12.2850(362)	0.179(146)	-2.5475(530)	0.11383(448)	53
29	01 <sup>2</sup>	4878.29	4879.756212(129)	1.461318251(424)	2.98835(34)	4.026(74)	-8.87	7.4701850(5130)	8.6741(521)	0.938(123)			57
30	07 <sup>0</sup>	4887.52	4901.135690(174)	1.50476213(1086)	3.35666(192)	15.681(653)	-5.00						52
31	04 <sup>1</sup>	4888.03	4888.039808(274)	1.483249071(1132)	3.18691(165)	5.641(193)	-10.00	7.7780450(3940)	10.1423(347)	1.941(70)	-1.4768(544)	0.03949(451)	62
32	04 <sup>1</sup>	4902.93	4908.867050(199)	1.482394116(727)	3.18505(79)	7.175(157)	-10.00						63
33	04 <sup>1</sup>	4947.59	4971.276613(180)	1.479789260(712)	3.13782(152)	2.856(168)	-10.00						59
34	07 <sup>0</sup>	4949.31	4986.835387(230)	1.500903495(1051)	3.32805(152)	4.312(471)	-9.00						50
35	07 <sup>0</sup>	5041.65	5114.926881(193)	1.495249840(829)	3.30778(532)	-2.152(363)	-10.00						56

TABLE II. State term value matrix constants in  $\text{cm}^{-1}$ . The uncertainty in the last digits (standard deviation) is given in parenthesis. Values that do not have any uncertainty are calculated values and have been fixed in the fit.

Nr.	State	$T_{v(J=0)}$	$G_{v_2}(v_1, l)$	$B_v$	$D_v, 10^6$	$H_v, 10^{12}$	$L_v, 10^{17}$	$q_v, 10^3$	$q_{v,J} 10^8$	$q_{v,J} 10^{12}$	$\rho_v, 10^8$	$q_v, 10^4$	$J_m$
36	13 <sup>1</sup> 0	5366.88	5368.355557(67)	1.47980851(18)	3.10470(20)	7.380(12)	-10.30(78)	7.851732(94)	10.7084(53)	1.996(7)	-2.2635(129)	0.0965(10)	76
37	10 <sup>1</sup>	5393.69	5393.697732(66)	1.45793456(23)	2.89396(18)	3.215(38)	1.21(283)						60
38	13 <sup>3</sup> 0	5396.69	5410.007200(62)	1.47808147(16)	3.09446(21)	4.806(12)	-13.65(64)						77
39	08 <sup>0</sup>	5525.81	5525.812840(287)	1.51154881(226)	3.46655(311)	22.940(1160)	-3.00	8.337108(356)	13.3808(511)	4.631(164)	-2.3805(343)	0.0900	45
40	08 <sup>2</sup> 0	5541.39	5547.421124(209)	1.51055404(140)	3.45427(221)	24.476(854)	-5.00						54
41	02 <sup>2</sup>	5571.73	5571.734305(303)	1.46509603(192)	3.04947(171)	4.662(400)	-10.00	7.554220(1160)	9.6020(1120)	2.669(263)	-1.7900	0.0828	53
42	05 <sup>1</sup>	5577.46	5578.932554(199)	1.48709044(128)	3.26840(330)	7.892(331)	-10.00	7.887950(411)	10.4561(451)	1.143(120)	-1.3742(692)	0.0153(59)	54
43	02 <sup>2</sup>	5586.06	5591.922535(188)	1.46430584(109)	3.05258(102)	5.099(244)	-10.00						53
44	08 <sup>4</sup> 0	5588.00	5612.149949(221)	1.50757055(132)	3.42331(193)	17.719(733)	-5.00						48
45	05 <sup>3</sup>	5607.38	5620.782328(170)	1.48530502(87)	3.23608(82)	4.434(261)	-10.00						54
46	08 <sup>0</sup>	5665.62	5719.726195(483)	1.50261898(202)	3.29228(225)	-24.290(739)	-9.00						52
47	05 <sup>1</sup>	5667.27	5704.315145(307)	1.48175379(113)	3.17217(323)	6.425(372)	-10.00						51
48	08 <sup>0</sup>	5773.90	5869.649636(258)	1.49590864(104)	3.29237(107)	-9.210(302)	-10.00						54
49	14 <sup>0</sup>	6036.96	6036.960114(199)	1.48433768(43)	3.19053(27)	12.954(29)	-52.51(161)	7.977867(76)	11.3093(45)	2.185(6)	-2.2727(53)	0.0939(4)	74
50	14 <sup>2</sup> 0	6051.91	6057.852111(69)	1.48344204(19)	3.17232(13)	7.471(16)	1.00(100)						76
51	11 <sup>1</sup>	6083.34	6084.809862(87)	1.46158874(17)	2.96869(8)	4.841(11)	-11.30(66)	7.671213(223)	9.8932(141)	1.852(20)			77
52	14 <sup>4</sup> 0	6096.73	6120.427404(72)	1.48078821(19)	3.15500(18)	4.190(17)	-22.97(96)						78
53	09 <sup>1</sup> 0	6197.44	6198.859269(349)	1.51614743(242)	3.57041(376)	4.662(795)	-3.00	8.483734(405)	14.6402(785)	3.818	-2.0717	0.0656	50
54	09 <sup>3</sup> 0	6228.58	6242.335538(321)	1.51404021(157)	3.48474(130)	24.894	-5.00						41
55	00 <sup>3</sup>	6228.59	6228.598299(62)	1.44780785(57)	2.92970(95)	3.160	0.00						28 <sup>a</sup>
56	06 <sup>1</sup>	6254.41	6254.405902(1059)	1.4915359(111)	3.86120(2320)	7.892	-10.00	7.921570(3210)	6.7080(2600)	1.816	-1.7360	0.0153	21
57	03 <sup>2</sup>	6267.67	6269.128532(817)	1.46861869(441)	3.16339(678)	22.350(3020)	-10.00	7.619843(577)	7.4905(524)	0.959	-1.8825		38
58	06 <sup>2</sup>	6269.51	6275.440607(1362)	1.4908316(111)	3.40910(1230)	6.553	-10.00						27
59	09 <sup>5</sup> 0	6291.32	6329.080358(404)	1.50997765(219)	3.48916(291)	0.474	-7.00						27
60	03 <sup>2</sup>	6296.51	6309.718441(315)	1.46694424(174)	3.11847(243)	4.848(920)	-10.00						43
61	06 <sup>1</sup>	6314.71	6338.535154(468)	1.48782554(292)	3.23527(319)	3.033	0.00						42
62	09 <sup>0</sup>	6385.04	6458.737373(984)	1.50389380(252)	3.33665(170)	-3.414	-9.00						45
63	06 <sup>1</sup>	6389.94	6443.363348(1962)	1.48327193(562)	3.20861(492)	-21.18(163)	0.00						50
64	09 <sup>0</sup>	6509.47	6630.662222(358)	1.49602520(123)	3.24680(118)	-10.559(440)	-10.00						52
65	20 <sup>0</sup>	6519.61	6519.610486(47)	1.45707364(9)	2.86162(4)	3.960(5)	-10.23(36)						76
66	15 <sup>1</sup> 0	6709.52	6710.986224(157)	1.48854435(60)	3.2835(61)	13.302(52)	-48.62(320)	8.107049(164)	11.7996(98)	1.845(14)	-1.7885(122)	0.0419(9)	72
67	15 <sup>0</sup>	6739.46	6752.875726(134)	1.48671209(44)	3.24051(27)	6.926(53)	-40.74(286)						72
68	12 <sup>1</sup>	6760.70	6760.705136(132)	1.46574585(68)	3.04346(45)	6.744(76)	-46.44(474)	7.777441(352)	10.1893(244)	1.426(41)	-1.7900	0.0828	68
69	12 <sup>1</sup>	6775.38	6781.242116(95)	1.46491143(38)	3.03753(23)	4.236(37)	31.48(235)						69
70	15 <sup>0</sup>	6799.38	6836.462859(148)	1.48309075(42)	3.18570(53)	7.003(57)	-74.19(265)						73
71	010 <sup>0</sup>	6855.44	6855.443088(532)	1.52148167(346)	3.70826(403)	27.53(118)	-3.00	8.650000	16.0000	3.800	-2.0717	0.0656	50

<sup>a</sup>From absorption measurements (Ref. 70).

The rotationless term values  $T_{v,(J=0)}$  are given in Tables I and II. They have been calculated by extrapolating to  $J = 0$  the experimental eigenenergies up to  $J = 30$  using Eq. (1) for the parity component having the lower eigenenergy value. For vibrational substates with  $l > 0$  these term values represent eigenenergy values for the fictitious  $J = 0$  state. The  $T_{v,(J=0)}$  term values have been used to sort the states in Tables I and II. The  $T_{v,(J=0)}$  term values are approximately equal to the rotationless term values predicted by the physical model defined by Eqs. (1)–(3) (denoted  $G_c$  or  $T_{v,J=0}$ ). For the majority states reported here the difference between these two definitions is less than  $0.01 \text{ cm}^{-1}$ . The  $T_{v,(J=0)}$  term values are used to compare the vibrational part of the experimental eigenenergies reported here to results obtained with a physical model approximated by Eq. (1) plus the analytical form of the  $l$ -doubling Eq. (2).

## V. THE HCN RELATIVE ROVIBRONIC EIGENENERGIES

Tables IV–XIX list the complete experimental eigenenergies of the [H,C,N] molecular system up to  $6880 \text{ cm}^{-1}$  relative to the HCN ground state (the states are labeled as  $v_1 v_2^l v_3 J^{e/f}$ ). The eigenenergies are relative values and represent only the values that result from the wave functions localized in the HCN part of the potential. All perturbed states below  $6880 \text{ cm}^{-1}$  have been determined and included in Tables IV–XIX so that the eigenenergy list is complete and accurate (see Sec. VI and Ref. 82). Only the last Table XIX has a few entries for the state  $06^{2f}1$  which are unperturbed. The assignment of the very weak  $06^{2e}1$  transitions in the  $v_2$  wavenumber region used to determine the eigenenergies could not be confirmed through other transitions. These eigenenergies have thus much lower accuracy than all other eigenenergies but still less than  $1 \text{ cm}^{-1}$ .

A second list of relative eigenenergies is published in this work as supplementary material.<sup>82</sup> This list contains all 11 070 eigenenergies up to  $J = 90$  for the  $123 (v_1, v_2, l, v_3, e/f)$  type vibrational states listed in Tables I and II. In this list the experimentally detected eigenenergies up to  $J_{max}$  are extended with calculated eigenenergies up to  $J = 90$ . For the perturbed states the experimentally detected or estimated eigenenergies of these perturbed states are given. Due to the high order centrifugal distortion constants determined in this work the predicted eigenenergies should be accurate to  $1 \text{ cm}^{-1}$  even at the highest  $J$ . This estimation is based on the changes in the eigenenergy list that one can observe if small changes in the assignments with the highest  $J$  assigned for a band series are made. If the fit is redone and the new set of eigenenergies is compared to the old ones one can estimate the accuracy of the values listed for  $J = 90$ . A small part of these eigenenergies is in the region of the potential barrier and thus the calculated eigenenergies are only approximate values.

Table III lists the standard deviations for the rovibrational states in each of the 71 vibrational levels based on the difference between the measured and calculated peak positions. These error values should be used to describe the rotational accuracy of the eigenenergies listed in Tables IV–XIX. The

TABLE III. Upper limit of the uncertainty in  $\text{cm}^{-1}$  (standard deviation) for the rovibrational levels listed in Table IV–V.

State	$\sigma_{\bar{v}}$	State	$\sigma_{\bar{v}}$	State	$\sigma_{\bar{v}}$
00 <sup>0</sup> 0	0.00006	06 <sup>6</sup> 0	0.00090	14 <sup>0</sup> 0	0.00054
01 <sup>1</sup> 0	0.00006	12 <sup>0</sup> 0	0.00028	14 <sup>2</sup> 0	0.00046
02 <sup>0</sup> 0	0.00008	12 <sup>2</sup> 0	0.00028	11 <sup>1</sup> 1	0.00055
02 <sup>2</sup> 0	0.00008	07 <sup>1</sup> 0	0.00092	14 <sup>4</sup> 0	0.00047
00 <sup>0</sup> 1	0.00014	01 <sup>1</sup> 2	0.00057	09 <sup>1</sup> 0	0.00190
03 <sup>1</sup> 0	0.00015	07 <sup>3</sup> 0	0.00092	09 <sup>3</sup> 0	0.00147
03 <sup>3</sup> 0	0.00015	04 <sup>0</sup> 1	0.00073	00 <sup>0</sup> 3	0.00000
04 <sup>0</sup> 0	0.00019	04 <sup>2</sup> 1	0.00073	06 <sup>0</sup> 1	0.00186
01 <sup>1</sup> 1	0.00036	04 <sup>4</sup> 1	0.00073	03 <sup>1</sup> 2	0.00084
04 <sup>2</sup> 0	0.00019	07 <sup>5</sup> 0	0.00092	06 <sup>2</sup> 1	0.30000
04 <sup>4</sup> 0	0.00019	07 <sup>7</sup> 0	0.00092	09 <sup>5</sup> 0	0.00078
10 <sup>0</sup> 0	0.00020	13 <sup>1</sup> 0	0.00046	03 <sup>3</sup> 2	0.00084
05 <sup>1</sup> 0	0.00020	10 <sup>0</sup> 1	0.00027	06 <sup>4</sup> 1	0.00097
02 <sup>0</sup> 1	0.00039	13 <sup>3</sup> 0	0.00046	09 <sup>7</sup> 0	0.00082
02 <sup>2</sup> 1	0.00039	08 <sup>0</sup> 0	0.00113	06 <sup>6</sup> 1	0.00061
05 <sup>3</sup> 0	0.00020	08 <sup>2</sup> 0	0.00113	09 <sup>9</sup> 0	0.00027
05 <sup>5</sup> 0	0.00020	02 <sup>0</sup> 2	0.00057	20 <sup>0</sup> 0	0.00022
11 <sup>1</sup> 0	0.00023	05 <sup>1</sup> 1	0.00075	15 <sup>1</sup> 0	0.00091
00 <sup>0</sup> 2	0.00057	02 <sup>2</sup> 2	0.00057	15 <sup>3</sup> 0	0.00063
06 <sup>0</sup> 0	0.00029	08 <sup>4</sup> 0	0.00113	12 <sup>0</sup> 1	0.00056
06 <sup>2</sup> 0	0.00032	05 <sup>3</sup> 1	0.00075	12 <sup>2</sup> 1	0.00056
03 <sup>1</sup> 1	0.00063	08 <sup>6</sup> 0	0.00113	15 <sup>5</sup> 0	0.00075
03 <sup>3</sup> 1	0.00063	05 <sup>5</sup> 1	0.00075	010 <sup>0</sup> 0	0.00417
06 <sup>4</sup> 0	0.00026	08 <sup>8</sup> 0	0.00113		

problems related the accuracy and precision of the analysis presented here was discussed in a previous paper.<sup>18</sup> The author excludes the possibility of assignment errors in the presented tables. To minimize the problem of possible transcription errors the original rovibrational energy lists from the SyMath user interface system have been included as supplementary material.<sup>82</sup>

## VI. PERTURBED EIGENENERGIES

The model based on the matrix elements listed in Eqs. (1)–(3) with the spectroscopic constants from Tables I and II does not reproduce all experimental HCN eigenstates. A few eigenenergies are perturbed due to Coriolis-type resonances. All resonances observed in this work for HCN are local resonances. In the case of local resonances the rovibrational eigenenergies  $T(v_1, v_2, l, v_3, J, e)$  or  $T(v_1, v_2, l, v_3, J, f)$  are perturbed only in a well defined range of rotational quantum numbers  $J$ . The perturbed eigenenergies may be included in the analysis if additional matrix elements are considered in the physical model. In this work transitions between perturbed levels have been excluded from the analysis to get unperturbed spectroscopic constants. The perturbed transition wavenumbers have been collected in perturbation analysis tables. Using the unperturbed eigenenergies and the assigned perturbed transitions, the perturbed eigenenergies have been determined in a combination difference type analysis. In the perturbation analysis the accuracy of the different transitions from or to the perturbed level has been considered.

TABLE IV. The  $\text{H}^{12}\text{C}^{14}\text{N}$  rovibrational levels in  $\text{cm}^{-1}$ .

<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>
1	00 <sup>0</sup> 1 <sup>e</sup>	2.95643	61	01 <sup>1</sup> 0 17 <sup>f</sup>	1166.26682	121	02 <sup>2</sup> 0 13 <sup>e</sup>	1696.82781	181	03 <sup>3</sup> 0 4 <sup>f</sup>	2173.51823
2	00 <sup>0</sup> 2 <sup>e</sup>	8.86923	62	00 <sup>0</sup> 0 28 <sup>e</sup>	1198.39938	122	02 <sup>0</sup> 0 14 <sup>e</sup>	1723.13685	182	01 <sup>1</sup> 0 31 <sup>e</sup>	2175.30712
3	00 <sup>0</sup> 3 <sup>e</sup>	17.73825	63	01 <sup>1</sup> 0 18 <sup>e</sup>	1217.12474	123	02 <sup>2</sup> 0 14 <sup>f</sup>	1738.25083	183	03 <sup>1</sup> 0 6 <sup>e</sup>	2175.68174
4	00 <sup>0</sup> 4 <sup>e</sup>	29.56329	64	01 <sup>1</sup> 0 18 <sup>f</sup>	1219.67521	124	02 <sup>2</sup> 0 14 <sup>e</sup>	1738.41629	184	03 <sup>1</sup> 0 6 <sup>f</sup>	2176.32892
5	00 <sup>0</sup> 5 <sup>e</sup>	44.34406	65	01 <sup>1</sup> 0 19 <sup>e</sup>	1273.20965	125	01 <sup>1</sup> 0 26 <sup>e</sup>	1748.11594	185	02 <sup>2</sup> 0 22 <sup>f</sup>	2177.17527
6	00 <sup>0</sup> 6 <sup>e</sup>	62.08022	66	01 <sup>1</sup> 0 19 <sup>f</sup>	1276.04224	126	01 <sup>1</sup> 0 26 <sup>f</sup>	1753.32909	186	02 <sup>2</sup> 0 22 <sup>e</sup>	2178.10190
7	00 <sup>0</sup> 7 <sup>e</sup>	82.77135	67	00 <sup>0</sup> 0 29 <sup>e</sup>	1283.85273	127	00 <sup>0</sup> 0 34 <sup>e</sup>	1754.96856	187	00 <sup>0</sup> 1 7 <sup>e</sup>	2179.05243
8	00 <sup>0</sup> 8 <sup>e</sup>	106.41696	68	01 <sup>1</sup> 0 20 <sup>e</sup>	1332.23725	128	02 <sup>0</sup> 0 15 <sup>e</sup>	1767.61997	188	01 <sup>1</sup> 0 31 <sup>f</sup>	2182.64903
9	00 <sup>0</sup> 9 <sup>e</sup>	133.01648	69	01 <sup>1</sup> 0 20 <sup>f</sup>	1335.36654	129	02 <sup>2</sup> 0 15 <sup>f</sup>	1782.76058	189	00 <sup>0</sup> 0 38 <sup>e</sup>	2184.34366
10	00 <sup>0</sup> 10 <sup>e</sup>	162.56930	70	00 <sup>0</sup> 0 30 <sup>e</sup>	1372.23221	130	02 <sup>2</sup> 0 15 <sup>e</sup>	1782.97641	190	03 <sup>3</sup> 0 5 <sup>e</sup>	2188.39654
11	00 <sup>0</sup> 11 <sup>e</sup>	195.07471	71	01 <sup>1</sup> 0 21 <sup>e</sup>	1394.20615	131	02 <sup>0</sup> 0 16 <sup>e</sup>	1815.05548	191	03 <sup>3</sup> 0 5 <sup>f</sup>	2188.39656
12	00 <sup>0</sup> 12 <sup>e</sup>	230.53194	72	01 <sup>1</sup> 0 21 <sup>f</sup>	1397.64667	132	01 <sup>1</sup> 0 27 <sup>e</sup>	1827.69916	192	03 <sup>1</sup> 0 7 <sup>e</sup>	2196.42198
13	00 <sup>0</sup> 13 <sup>e</sup>	268.94016	73	02 <sup>0</sup> 0 0 <sup>e</sup>	1411.41345	133	02 <sup>2</sup> 0 16 <sup>f</sup>	1830.23164	193	03 <sup>1</sup> 0 7 <sup>f</sup>	2197.28468
14	00 <sup>0</sup> 14 <sup>e</sup>	310.29846	74	02 <sup>0</sup> 0 1 <sup>e</sup>	1414.38509	134	02 <sup>2</sup> 0 16 <sup>e</sup>	1830.50826	194	00 <sup>0</sup> 1 8 <sup>e</sup>	2202.53675
15	00 <sup>0</sup> 15 <sup>e</sup>	354.60586	75	02 <sup>0</sup> 0 2 <sup>e</sup>	1420.32822	135	01 <sup>1</sup> 0 27 <sup>f</sup>	1833.30979	195	03 <sup>3</sup> 0 6 <sup>e</sup>	2206.25009
16	00 <sup>0</sup> 16 <sup>e</sup>	401.86132	76	02 <sup>0</sup> 0 3 <sup>e</sup>	1429.24249	136	00 <sup>0</sup> 0 35 <sup>e</sup>	1857.94598	196	03 <sup>3</sup> 0 6 <sup>f</sup>	2206.25014
17	00 <sup>0</sup> 17 <sup>e</sup>	452.06372	77	02 <sup>2</sup> 0 2 <sup>f</sup>	1435.43988	137	02 <sup>0</sup> 0 17 <sup>e</sup>	1865.44102	197	03 <sup>1</sup> 0 8 <sup>e</sup>	2220.12298
18	00 <sup>0</sup> 18 <sup>e</sup>	505.21187	78	02 <sup>2</sup> 0 2 <sup>e</sup>	1435.43997	138	02 <sup>2</sup> 0 17 <sup>f</sup>	1880.66284	198	03 <sup>1</sup> 0 8 <sup>f</sup>	2221.23183
19	00 <sup>0</sup> 19 <sup>e</sup>	561.30452	79	02 <sup>0</sup> 0 4 <sup>e</sup>	1441.12742	139	02 <sup>2</sup> 0 17 <sup>e</sup>	1881.01189	199	03 <sup>3</sup> 0 7 <sup>e</sup>	2227.07863
20	00 <sup>0</sup> 20 <sup>e</sup>	620.34034	80	02 <sup>2</sup> 0 3 <sup>f</sup>	1444.34969	140	01 <sup>1</sup> 0 28 <sup>e</sup>	1910.21189	200	03 <sup>3</sup> 0 7 <sup>f</sup>	2227.07874
21	00 <sup>0</sup> 21 <sup>e</sup>	682.31795	81	02 <sup>2</sup> 0 3 <sup>e</sup>	1444.35015	141	01 <sup>1</sup> 0 28 <sup>f</sup>	1916.23419	201	00 <sup>0</sup> 1 9 <sup>e</sup>	2228.95482
22	01 <sup>1</sup> 0 1 <sup>e</sup>	714.93565	82	02 <sup>0</sup> 0 5 <sup>e</sup>	1455.98235	142	02 <sup>0</sup> 0 18 <sup>e</sup>	1918.77413	202	02 <sup>0</sup> 0 23 <sup>e</sup>	2229.56469
23	01 <sup>1</sup> 0 1 <sup>f</sup>	714.95063	83	02 <sup>2</sup> 0 4 <sup>f</sup>	1456.22909	143	02 <sup>2</sup> 0 18 <sup>f</sup>	1934.05295	203	02 <sup>2</sup> 0 23 <sup>f</sup>	2245.33889
24	01 <sup>1</sup> 0 2 <sup>e</sup>	720.84770	84	02 <sup>2</sup> 0 4 <sup>e</sup>	1456.23046	144	02 <sup>2</sup> 0 18 <sup>e</sup>	1934.48726	204	02 <sup>2</sup> 0 23 <sup>e</sup>	2246.43166
25	01 <sup>1</sup> 0 2 <sup>f</sup>	720.89262	85	01 <sup>1</sup> 0 22 <sup>e</sup>	1459.11486	145	00 <sup>0</sup> 0 36 <sup>e</sup>	1963.83598	205	03 <sup>1</sup> 0 9 <sup>e</sup>	2246.78390
26	01 <sup>1</sup> 0 3 <sup>e</sup>	729.71560	86	01 <sup>1</sup> 0 22 <sup>f</sup>	1462.88111	146	02 <sup>0</sup> 0 19 <sup>e</sup>	1975.05230	206	03 <sup>1</sup> 0 9 <sup>f</sup>	2248.16945
27	01 <sup>1</sup> 0 3 <sup>f</sup>	729.80544	87	00 <sup>0</sup> 0 31 <sup>e</sup>	1463.53571	147	02 <sup>2</sup> 0 19 <sup>f</sup>	1990.40067	207	03 <sup>3</sup> 0 8 <sup>e</sup>	2250.88187
28	01 <sup>1</sup> 0 4 <sup>e</sup>	741.53913	88	02 <sup>2</sup> 0 5 <sup>f</sup>	1471.07780	148	02 <sup>2</sup> 0 19 <sup>e</sup>	1990.93424	208	03 <sup>3</sup> 0 8 <sup>f</sup>	2250.88212
29	01 <sup>1</sup> 0 4 <sup>f</sup>	741.68885	89	02 <sup>2</sup> 0 5 <sup>e</sup>	1471.08099	149	01 <sup>1</sup> 0 29 <sup>e</sup>	1995.65216	209	00 <sup>0</sup> 1 10 <sup>e</sup>	2258.30603
30	00 <sup>0</sup> 0 22 <sup>e</sup>	747.23587	90	02 <sup>0</sup> 0 6 <sup>e</sup>	1473.80644	150	01 <sup>1</sup> 0 29 <sup>f</sup>	2002.10027	210	01 <sup>1</sup> 0 32 <sup>e</sup>	2269.51754
31	01 <sup>1</sup> 0 5 <sup>e</sup>	756.31802	91	02 <sup>2</sup> 0 6 <sup>f</sup>	1488.89544	151	02 <sup>0</sup> 0 20 <sup>e</sup>	2034.27300	211	03 <sup>1</sup> 0 10 <sup>e</sup>	2276.40378
32	01 <sup>1</sup> 0 5 <sup>f</sup>	756.54257	92	02 <sup>2</sup> 0 6 <sup>e</sup>	1488.90184	152	02 <sup>2</sup> 0 20 <sup>f</sup>	2049.70460	212	01 <sup>1</sup> 0 32 <sup>f</sup>	2277.32731
33	01 <sup>1</sup> 0 6 <sup>e</sup>	774.05191	93	02 <sup>0</sup> 0 7 <sup>e</sup>	1494.59872	153	02 <sup>2</sup> 0 20 <sup>e</sup>	2050.35260	213	03 <sup>3</sup> 0 9 <sup>e</sup>	2277.65949
34	01 <sup>1</sup> 0 6 <sup>f</sup>	774.36623	94	02 <sup>2</sup> 0 7 <sup>f</sup>	1509.68159	154	00 <sup>0</sup> 0 37 <sup>e</sup>	2072.63606	214	03 <sup>3</sup> 0 9 <sup>f</sup>	2277.65998
35	01 <sup>1</sup> 0 7 <sup>e</sup>	794.74038	95	02 <sup>2</sup> 0 7 <sup>e</sup>	1509.69311	155	01 <sup>1</sup> 0 30 <sup>e</sup>	2084.01794	215	03 <sup>1</sup> 0 10 <sup>f</sup>	2278.09649
36	01 <sup>1</sup> 0 7 <sup>f</sup>	795.15941	96	02 <sup>0</sup> 0 8 <sup>e</sup>	1518.35802	156	01 <sup>1</sup> 0 30 <sup>f</sup>	2090.90594	216	00 <sup>0</sup> 1 11 <sup>e</sup>	2290.58965
37	00 <sup>0</sup> 0 23 <sup>e</sup>	815.09258	97	01 <sup>1</sup> 0 23 <sup>e</sup>	1526.96185	157	02 <sup>0</sup> 0 21 <sup>e</sup>	2096.43367	217	00 <sup>0</sup> 0 39 <sup>e</sup>	2298.95614
38	01 <sup>1</sup> 0 8 <sup>e</sup>	818.38294	98	01 <sup>1</sup> 0 23 <sup>f</sup>	1531.06827	158	00 <sup>0</sup> 1 0 <sup>e</sup>	2096.84554	218	02 <sup>0</sup> 0 24 <sup>e</sup>	2300.52999
39	01 <sup>1</sup> 0 8 <sup>f</sup>	818.92160	99	02 <sup>2</sup> 0 8 <sup>f</sup>	1533.43574	159	00 <sup>0</sup> 1 1 <sup>e</sup>	2099.78182	219	03 <sup>3</sup> 0 10 <sup>e</sup>	2307.41110
40	01 <sup>1</sup> 0 9 <sup>e</sup>	844.97903	100	02 <sup>2</sup> 0 8 <sup>e</sup>	1533.45494	160	00 <sup>0</sup> 1 2 <sup>e</sup>	2105.65430	220	03 <sup>3</sup> 0 10 <sup>f</sup>	2307.41202
41	01 <sup>1</sup> 0 9 <sup>f</sup>	845.65220	101	02 <sup>0</sup> 0 9 <sup>e</sup>	1545.08303	161	02 <sup>2</sup> 0 21 <sup>f</sup>	2111.96331	221	03 <sup>1</sup> 0 11 <sup>e</sup>	2308.98160
42	01 <sup>1</sup> 0 10 <sup>e</sup>	874.52801	102	00 <sup>0</sup> 0 32 <sup>e</sup>	1557.76110	162	02 <sup>2</sup> 0 21 <sup>e</sup>	2112.74199	222	03 <sup>1</sup> 0 11 <sup>f</sup>	2311.01177
43	01 <sup>1</sup> 0 10 <sup>f</sup>	875.35058	103	02 <sup>2</sup> 0 9 <sup>f</sup>	1560.15730	163	00 <sup>0</sup> 1 3 <sup>e</sup>	2114.46284	223	02 <sup>2</sup> 0 24 <sup>f</sup>	2316.45248
44	00 <sup>0</sup> 0 24 <sup>e</sup>	885.88646	104	02 <sup>2</sup> 0 9 <sup>e</sup>	1560.18746	164	03 <sup>1</sup> 0 1 <sup>e</sup>	2116.41425	224	02 <sup>2</sup> 0 24 <sup>e</sup>	2317.73043
45	01 <sup>1</sup> 0 11 <sup>e</sup>	907.02917	105	02 <sup>0</sup> 0 10 <sup>e</sup>	1574.77228	165	03 <sup>1</sup> 0 1 <sup>f</sup>	2116.44509	225	00 <sup>0</sup> 1 12 <sup>e</sup>	2325.80493
46	01 <sup>1</sup> 0 11 <sup>f</sup>	908.01600	106	02 <sup>2</sup> 0 10 <sup>f</sup>	1589.84561	166	03 <sup>1</sup> 0 2 <sup>e</sup>	2122.34165	226	03 <sup>3</sup> 0 11 <sup>e</sup>	2340.13628
47	01 <sup>1</sup> 0 12 <sup>e</sup>	942.48175	107	02 <sup>2</sup> 0 10 <sup>e</sup>	1589.89084	167	03 <sup>1</sup> 0 2 <sup>f</sup>	2122.43415	227	03 <sup>3</sup> 0 11 <sup>f</sup>	2340.13789
48	01 <sup>1</sup> 0 12 <sup>f</sup>	943.64767	108	01 <sup>1</sup> 0 24 <sup>e</sup>	1597.74549	168	00 <sup>0</sup> 1 4 <sup>e</sup>	2126.20725	228	03 <sup>1</sup> 0 12 <sup>e</sup>	2344.51621
49	00 <sup>0</sup> 0 25 <sup>e</sup>	959.61586	109	01 <sup>1</sup> 0 24 <sup>f</sup>	1602.20649	169	03 <sup>1</sup> 0 3 <sup>e</sup>	2131.23247	229	03 <sup>1</sup> 0 12 <sup>f</sup>	2346.91399
50	01 <sup>1</sup> 0 13 <sup>e</sup>	980.88490	110	02 <sup>0</sup> 0 11 <sup>e</sup>	1607.42413	170	03 <sup>1</sup> 0 3 <sup>f</sup>	2131.41746	230	00 <sup>0</sup> 1 13 <sup>e</sup>	2363.95103
51	01 <sup>1</sup> 0 13 <sup>f</sup>	982.24473	111	02 <sup>2</sup> 0 11 <sup>f</sup>	1622.49996	171	00 <sup>0</sup> 1 5 <sup>e</sup>	2140.88722	231	01 <sup>1</sup> 0 33 <sup>e</sup>	2366.64695
52	01 <sup>1</sup> 0 14 <sup>e</sup>	1022.23771	112	02 <sup>2</sup> 0 11 <sup>e</sup>	1622.56525	172	03 <sup>1</sup> 0 4 <sup>e</sup>	2143.08639	232	02 <sup>0</sup> 0 25 <sup>e</sup>	2374.42516
53	01 <sup>1</sup> 0 14 <sup>f</sup>	1023.80622	113	02 <sup>0</sup> 0 12 <sup>e</sup>	1643.03682	173	03 <sup>1</sup> 0 4 <sup>f</sup>	2143.39468	233	01 <sup>1</sup> 0 33 <sup>f</sup>	2374.93849
54	00 <sup>0</sup> 0 26 <sup>e</sup>	1036.27903	114	00 <sup>0</sup> 0 33 <sup>e</sup>	1654.90615	174	03 <sup>1</sup> 0 5 <sup>e</sup>	2157.90300	234	03 <sup>3</sup> 0 12 <sup>e</sup>	2375.83455
55	01 <sup>1</sup> 0 15 <sup>e</sup>	1066.53918	115	02 <sup>2</sup> 0 12 <sup>f</sup>	1658.11954	175	03 <sup>1</sup> 0 5 <sup>f</sup>	2158.36535	235	03 <sup>3</sup> 0 12 <sup>f</sup>	2375.83724
56	01 <sup>1</sup> 0 15 <sup>f</sup>	1068.33114	116	02 <sup>2</sup> 0 12 <sup>e</sup>	1658.21085	176	00 <sup>0</sup> 1 6 <sup>e</sup>	2158.50242	236	03 <sup>1</sup> 0 13 <sup>e</sup>	2383.00639
57	01 <sup>1</sup> 0 16 <sup>e</sup>	1113.78828	117	01 <sup>1</sup> 0 25 <sup>e</sup>	1671.46410	177	02 <sup>0</sup> 0 22 <sup>e</sup>	2161.53175	237	03 <sup>1</sup> 0 13 <sup>f</sup>	2385.80170
58	01 <sup>1</sup> 0 16 <sup>f</sup>	1115.81839	118	01 <sup>1</sup> 0 25 <sup>f</sup>	1676.29403	178	03 <sup>3</sup> 0 3 <sup>f</sup>	2161.61533	238	02 <sup>2</sup> 0 25 <sup>f</sup>	2390.51433
59	00 <sup>0</sup> 0 27 <sup>e</sup>	1115.87417	119	02 <sup>0</sup> 0 13 <sup>e</sup>	1681.60841	179	03 <sup>3</sup> 0 3 <sup>e</sup>	2161.61533	239	02 <sup>2</sup> 0 25 <sup>e</sup>	2391.99720
60	01 <sup>1</sup> 0 17 <sup>e</sup>	1163.98386	120	02 <sup>2</sup> 0 13 <sup>f</sup>	1696.70348	180	03 <sup>3</sup> 0 4 <sup>e</sup>	2173.51822	240	00 <sup>0</sup> 1 14 <sup>e</sup>	2405.02703



TABLE V. The  $\text{H}^{12}\text{C}^{14}\text{N}$  rovibrational levels in  $\text{cm}^{-1}$ .

<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>
241	03 <sup>3</sup> 0 13 <sup>e</sup>	2414.50539	301	02 <sup>0</sup> 0 30 <sup>e</sup>	2787.76572	361	00 <sup>0</sup> 0 44 <sup>e</sup>	2915.49487	421	02 <sup>2</sup> 0 33 <sup>e</sup>	3092.79454
242	03 <sup>3</sup> 0 13 <sup>f</sup>	2414.50970	302	01 <sup>1</sup> 0 37 <sup>f</sup>	2794.66356	362	04 <sup>2</sup> 0 8 <sup>f</sup>	2925.65065	422	04 <sup>4</sup> 0 12 <sup>f</sup>	3096.24547
243	00 <sup>0</sup> 0 40 <sup>e</sup>	2416.47081	303	03 <sup>1</sup> 0 21 <sup>e</sup>	2797.15258	363	04 <sup>2</sup> 0 8 <sup>e</sup>	2925.71121	423	04 <sup>4</sup> 0 12 <sup>e</sup>	3096.24551
244	03 <sup>1</sup> 0 14 <sup>e</sup>	2424.45082	304	04 <sup>0</sup> 0 0 <sup>e</sup>	2802.95874	364	04 <sup>4</sup> 0 6 <sup>e</sup>	2926.37580	424	03 <sup>3</sup> 0 25 <sup>e</sup>	3110.13584
245	03 <sup>1</sup> 0 14 <sup>f</sup>	2427.67332	305	03 <sup>1</sup> 0 21 <sup>f</sup>	2804.16124	365	04 <sup>4</sup> 0 6 <sup>f</sup>	2926.37580	425	03 <sup>3</sup> 0 25 <sup>f</sup>	3110.33850
246	00 <sup>0</sup> 1 15 <sup>e</sup>	2449.03197	306	02 <sup>2</sup> 0 30 <sup>f</sup>	2804.98132	366	03 <sup>1</sup> 0 23 <sup>e</sup>	2930.13377	426	01 <sup>1</sup> 1 14 <sup>e</sup>	3113.69774
247	02 <sup>0</sup> 0 26 <sup>e</sup>	2451.24778	307	04 <sup>0</sup> 0 1 <sup>e</sup>	2805.94646	367	04 <sup>0</sup> 0 9 <sup>e</sup>	2937.28226	427	01 <sup>1</sup> 1 14 <sup>f</sup>	3115.26588
248	03 <sup>3</sup> 0 14 <sup>e</sup>	2456.14820	308	02 <sup>2</sup> 0 30 <sup>e</sup>	2807.80189	368	01 <sup>1</sup> 1 9 <sup>e</sup>	2937.66678	428	04 <sup>0</sup> 0 14 <sup>e</sup>	3116.01570
249	03 <sup>3</sup> 0 14 <sup>f</sup>	2456.15486	309	01 <sup>1</sup> 1 1 <sup>e</sup>	2808.51769	369	01 <sup>1</sup> 1 9 <sup>f</sup>	2938.33635	429	00 <sup>0</sup> 1 26 <sup>e</sup>	3126.04567
250	01 <sup>1</sup> 0 34 <sup>e</sup>	2466.69304	310	01 <sup>1</sup> 1 1 <sup>f</sup>	2808.53265	370	03 <sup>1</sup> 0 23 <sup>f</sup>	2938.46078	430	01 <sup>1</sup> 0 40 <sup>e</sup>	3128.08194
251	02 <sup>2</sup> 0 26 <sup>f</sup>	2467.52261	311	04 <sup>0</sup> 0 2 <sup>e</sup>	2811.92154	371	04 <sup>4</sup> 0 7 <sup>e</sup>	2947.23948	431	04 <sup>2</sup> 0 14 <sup>f</sup>	3131.51375
252	03 <sup>1</sup> 0 15 <sup>e</sup>	2468.84809	312	01 <sup>1</sup> 1 2 <sup>e</sup>	2814.38895	372	04 <sup>4</sup> 0 7 <sup>f</sup>	2947.23948	432	04 <sup>2</sup> 0 14 <sup>e</sup>	3132.02643
253	02 <sup>2</sup> 0 26 <sup>e</sup>	2469.23075	313	01 <sup>1</sup> 1 2 <sup>f</sup>	2814.43384	373	04 <sup>2</sup> 0 9 <sup>f</sup>	2952.51213	433	04 <sup>4</sup> 0 13 <sup>f</sup>	3134.98121
254	03 <sup>1</sup> 0 15 <sup>f</sup>	2472.52715	314	04 <sup>0</sup> 0 3 <sup>e</sup>	2820.88324	374	04 <sup>2</sup> 0 9 <sup>e</sup>	2952.60714	434	04 <sup>4</sup> 0 13 <sup>e</sup>	3134.98130
255	01 <sup>1</sup> 0 34 <sup>f</sup>	2475.48018	315	01 <sup>1</sup> 1 3 <sup>e</sup>	2823.19566	375	03 <sup>3</sup> 0 23 <sup>e</sup>	2964.54353	435	01 <sup>1</sup> 0 40 <sup>f</sup>	3140.12934
256	00 <sup>0</sup> 1 16 <sup>e</sup>	2495.96478	316	01 <sup>1</sup> 1 3 <sup>f</sup>	2823.28543	376	03 <sup>3</sup> 0 23 <sup>f</sup>	2964.66782	436	03 <sup>1</sup> 0 26 <sup>e</sup>	3151.62606
257	03 <sup>3</sup> 0 15 <sup>e</sup>	2500.76233	317	04 <sup>2</sup> 0 2 <sup>f</sup>	2827.13352	377	01 <sup>1</sup> 1 10 <sup>e</sup>	2966.99492	437	01 <sup>1</sup> 1 15 <sup>e</sup>	3157.69403
258	03 <sup>3</sup> 0 15 <sup>f</sup>	2500.77234	318	04 <sup>2</sup> 0 2 <sup>e</sup>	2827.13381	378	04 <sup>0</sup> 0 10 <sup>e</sup>	2967.11653	438	01 <sup>1</sup> 1 15 <sup>f</sup>	3159.48465
259	03 <sup>1</sup> 0 16 <sup>e</sup>	2516.19672	319	03 <sup>3</sup> 0 21 <sup>e</sup>	2830.80050	379	01 <sup>1</sup> 1 10 <sup>f</sup>	2967.83066	439	04 <sup>0</sup> 0 15 <sup>e</sup>	3160.63555
260	03 <sup>1</sup> 0 16 <sup>f</sup>	2520.36132	320	03 <sup>3</sup> 0 21 <sup>f</sup>	2830.87328	380	04 <sup>4</sup> 0 8 <sup>e</sup>	2971.08282	440	03 <sup>1</sup> 0 26 <sup>f</sup>	3162.09874
261	02 <sup>0</sup> 0 27 <sup>e</sup>	2530.99547	321	04 <sup>0</sup> 0 4 <sup>e</sup>	2832.83046	381	04 <sup>4</sup> 0 8 <sup>f</sup>	2971.08282	441	02 <sup>0</sup> 0 34 <sup>e</sup>	3170.93880
262	00 <sup>0</sup> 0 41 <sup>e</sup>	2536.88489	322	01 <sup>1</sup> 1 4 <sup>e</sup>	2834.93761	382	02 <sup>0</sup> 0 32 <sup>e</sup>	2973.52930	442	04 <sup>2</sup> 0 15 <sup>f</sup>	3176.24380
263	00 <sup>0</sup> 1 17 <sup>e</sup>	2545.82435	323	01 <sup>1</sup> 1 4 <sup>f</sup>	2835.08722	383	00 <sup>0</sup> 1 24 <sup>e</sup>	2976.68204	443	04 <sup>4</sup> 0 14 <sup>f</sup>	3176.69395
264	02 <sup>2</sup> 0 27 <sup>f</sup>	2547.47544	324	04 <sup>2</sup> 0 3 <sup>f</sup>	2836.09125	384	04 <sup>2</sup> 0 10 <sup>f</sup>	2982.35478	444	04 <sup>4</sup> 0 14 <sup>e</sup>	3176.69411
265	03 <sup>3</sup> 0 16 <sup>e</sup>	2548.34708	325	04 <sup>2</sup> 0 3 <sup>e</sup>	2836.09269	385	04 <sup>2</sup> 0 10 <sup>e</sup>	2982.49697	445	04 <sup>2</sup> 0 15 <sup>e</sup>	3176.90871
266	03 <sup>3</sup> 0 16 <sup>f</sup>	2548.36172	326	00 <sup>0</sup> 1 22 <sup>e</sup>	2838.97957	386	02 <sup>2</sup> 0 32 <sup>f</sup>	2991.33691	446	00 <sup>0</sup> 0 46 <sup>e</sup>	3182.34474
267	02 <sup>2</sup> 0 27 <sup>e</sup>	2549.42968	327	04 <sup>0</sup> 0 5 <sup>e</sup>	2847.76174	387	02 <sup>2</sup> 0 32 <sup>e</sup>	2994.84296	447	03 <sup>3</sup> 0 26 <sup>e</sup>	3187.37192
268	03 <sup>1</sup> 0 17 <sup>e</sup>	2566.49513	328	04 <sup>2</sup> 0 4 <sup>f</sup>	2848.03438	388	04 <sup>4</sup> 0 9 <sup>e</sup>	2997.90550	448	03 <sup>3</sup> 0 26 <sup>f</sup>	3187.62674
269	01 <sup>1</sup> 0 35 <sup>e</sup>	2569.65344	329	04 <sup>2</sup> 0 4 <sup>e</sup>	2848.03872	389	04 <sup>4</sup> 0 9 <sup>f</sup>	2997.90550	449	02 <sup>2</sup> 0 34 <sup>f</sup>	3189.41942
270	03 <sup>1</sup> 0 17 <sup>f</sup>	2571.17381	330	01 <sup>1</sup> 1 5 <sup>e</sup>	2849.61453	390	01 <sup>1</sup> 1 11 <sup>e</sup>	2999.28293	450	02 <sup>2</sup> 0 34 <sup>e</sup>	3193.69679
271	01 <sup>1</sup> 0 35 <sup>f</sup>	2578.94995	331	01 <sup>1</sup> 1 5 <sup>f</sup>	2849.83891	391	04 <sup>0</sup> 0 11 <sup>e</sup>	2999.89103	451	01 <sup>1</sup> 1 16 <sup>e</sup>	3204.61674
272	00 <sup>0</sup> 1 18 <sup>e</sup>	2598.60949	332	03 <sup>1</sup> 0 22 <sup>e</sup>	2862.17375	392	01 <sup>1</sup> 1 11 <sup>f</sup>	3000.27160	452	00 <sup>0</sup> 1 27 <sup>e</sup>	3205.09601
273	03 <sup>3</sup> 0 17 <sup>e</sup>	2598.90167	333	04 <sup>2</sup> 0 5 <sup>f</sup>	2862.96248	393	03 <sup>1</sup> 0 24 <sup>e</sup>	3001.03057	453	01 <sup>1</sup> 1 16 <sup>f</sup>	3206.64534
274	03 <sup>3</sup> 0 17 <sup>f</sup>	2598.92261	334	04 <sup>2</sup> 0 5 <sup>e</sup>	2862.97260	394	03 <sup>1</sup> 0 24 <sup>f</sup>	3010.05163	454	04 <sup>0</sup> 0 16 <sup>e</sup>	3208.20393
275	02 <sup>0</sup> 0 28 <sup>e</sup>	2613.66588	335	04 <sup>0</sup> 0 6 <sup>e</sup>	2865.67496	395	01 <sup>1</sup> 0 39 <sup>e</sup>	3010.58811	455	04 <sup>4</sup> 0 15 <sup>f</sup>	3221.38310
276	03 <sup>1</sup> 0 18 <sup>e</sup>	2619.74168	336	01 <sup>1</sup> 1 6 <sup>e</sup>	2867.22660	396	04 <sup>2</sup> 0 11 <sup>f</sup>	3015.17752	456	04 <sup>4</sup> 0 15 <sup>e</sup>	3221.38337
277	03 <sup>1</sup> 0 18 <sup>f</sup>	2624.96245	337	01 <sup>1</sup> 1 6 <sup>f</sup>	2867.54014	397	04 <sup>2</sup> 0 11 <sup>e</sup>	3015.38225	457	04 <sup>2</sup> 0 16 <sup>f</sup>	3223.94687
278	02 <sup>2</sup> 0 28 <sup>f</sup>	2630.37086	338	03 <sup>1</sup> 0 22 <sup>f</sup>	2869.82959	398	01 <sup>1</sup> 0 39 <sup>f</sup>	3022.05836	458	04 <sup>2</sup> 0 16 <sup>e</sup>	3224.79336
279	02 <sup>2</sup> 0 28 <sup>e</sup>	2632.59239	339	02 <sup>0</sup> 0 31 <sup>e</sup>	2879.19066	399	04 <sup>4</sup> 0 10 <sup>f</sup>	3027.70712	459	03 <sup>1</sup> 0 27 <sup>e</sup>	3231.32037
280	03 <sup>3</sup> 0 18 <sup>e</sup>	2652.42526	340	04 <sup>2</sup> 0 6 <sup>f</sup>	2880.87502	400	04 <sup>4</sup> 0 10 <sup>e</sup>	3027.70713	460	03 <sup>1</sup> 0 27 <sup>f</sup>	3242.54779
281	03 <sup>3</sup> 0 18 <sup>f</sup>	2652.45459	341	04 <sup>2</sup> 0 6 <sup>e</sup>	2880.89523	401	01 <sup>1</sup> 1 12 <sup>e</sup>	3034.49176	461	01 <sup>1</sup> 0 41 <sup>e</sup>	3248.47435
282	00 <sup>0</sup> 1 19 <sup>e</sup>	2654.31894	342	04 <sup>0</sup> 0 7 <sup>e</sup>	2886.56831	402	04 <sup>0</sup> 0 12 <sup>e</sup>	3035.63973	462	01 <sup>1</sup> 1 17 <sup>e</sup>	3254.46554
283	00 <sup>0</sup> 0 42 <sup>e</sup>	2660.19554	343	01 <sup>1</sup> 1 7 <sup>e</sup>	2887.77261	403	01 <sup>1</sup> 1 12 <sup>f</sup>	3035.65837	463	01 <sup>1</sup> 1 17 <sup>f</sup>	3256.74678
284	01 <sup>1</sup> 0 36 <sup>e</sup>	2675.52570	344	01 <sup>1</sup> 1 7 <sup>f</sup>	2888.19048	404	03 <sup>3</sup> 0 24 <sup>e</sup>	3035.85921	464	04 <sup>0</sup> 0 17 <sup>e</sup>	3258.71811
285	03 <sup>1</sup> 0 19 <sup>e</sup>	2675.93464	345	04 <sup>4</sup> 0 4 <sup>e</sup>	2893.58861	405	03 <sup>3</sup> 0 24 <sup>f</sup>	3036.01878	465	01 <sup>1</sup> 0 41 <sup>f</sup>	3261.11225
286	03 <sup>1</sup> 0 19 <sup>f</sup>	2681.72493	346	04 <sup>4</sup> 0 4 <sup>f</sup>	2893.58861	406	00 <sup>0</sup> 0 45 <sup>e</sup>	3047.47753	466	03 <sup>3</sup> 0 27 <sup>e</sup>	3267.56587
287	01 <sup>1</sup> 0 36 <sup>f</sup>	2685.34527	347	01 <sup>1</sup> 0 38 <sup>e</sup>	2895.99565	407	00 <sup>0</sup> 1 25 <sup>e</sup>	3049.90707	467	03 <sup>3</sup> 0 27 <sup>f</sup>	3267.88327
288	02 <sup>0</sup> 0 29 <sup>e</sup>	2699.25672	348	03 <sup>3</sup> 0 22 <sup>e</sup>	2896.19018	408	04 <sup>2</sup> 0 12 <sup>f</sup>	3050.97914	468	04 <sup>4</sup> 0 16 <sup>f</sup>	3269.04801
289	03 <sup>3</sup> 0 19 <sup>e</sup>	2708.91693	349	03 <sup>3</sup> 0 22 <sup>f</sup>	2896.28589	409	04 <sup>2</sup> 0 12 <sup>e</sup>	3051.26457	469	04 <sup>4</sup> 0 16 <sup>e</sup>	3269.04846
290	03 <sup>3</sup> 0 19 <sup>f</sup>	2708.95728	350	02 <sup>2</sup> 0 31 <sup>f</sup>	2896.69209	410	04 <sup>4</sup> 0 11 <sup>f</sup>	3060.48727	470	02 <sup>0</sup> 0 35 <sup>e</sup>	3274.00518
291	00 <sup>0</sup> 1 20 <sup>e</sup>	2712.95139	351	02 <sup>2</sup> 0 31 <sup>e</sup>	2899.84460	411	04 <sup>4</sup> 0 11 <sup>e</sup>	3060.48729	471	04 <sup>2</sup> 0 17 <sup>f</sup>	3274.62123
292	02 <sup>2</sup> 0 29 <sup>f</sup>	2716.20686	352	04 <sup>2</sup> 0 7 <sup>f</sup>	2901.77132	412	02 <sup>0</sup> 0 33 <sup>e</sup>	3070.77942	472	04 <sup>2</sup> 0 17 <sup>e</sup>	3275.68110
293	02 <sup>2</sup> 0 29 <sup>e</sup>	2718.71711	353	04 <sup>2</sup> 0 7 <sup>e</sup>	2901.80770	413	01 <sup>1</sup> 1 13 <sup>e</sup>	3072.63015	473	00 <sup>0</sup> 1 28 <sup>e</sup>	3287.05623
294	03 <sup>1</sup> 0 20 <sup>e</sup>	2735.07223	354	00 <sup>0</sup> 1 23 <sup>e</sup>	2906.37232	414	01 <sup>1</sup> 1 13 <sup>f</sup>	3073.99011	474	02 <sup>2</sup> 0 35 <sup>f</sup>	3292.85227
295	03 <sup>1</sup> 0 20 <sup>f</sup>	2741.45875	355	01 <sup>1</sup> 0 38 <sup>f</sup>	2906.90217	415	04 <sup>0</sup> 0 13 <sup>e</sup>	3074.34902	475	02 <sup>2</sup> 0 35 <sup>e</sup>	3297.54701
296	03 <sup>3</sup> 0 20 <sup>e</sup>	2768.37570	356	04 <sup>4</sup> 0 5 <sup>e</sup>	2908.49209	416	03 <sup>1</sup> 0 25 <sup>e</sup>	3074.86206	476	01 <sup>1</sup> 1 18 <sup>e</sup>	3307.23922
297	03 <sup>3</sup> 0 20 <sup>f</sup>	2768.43030	357	04 <sup>4</sup> 0 5 <sup>f</sup>	2908.49209	417	03 <sup>1</sup> 0 25 <sup>f</sup>	3084.59879	477	01 <sup>1</sup> 1 18 <sup>f</sup>	3309.78776
298	00 <sup>0</sup> 1 21 <sup>e</sup>	2774.50542	358	04 <sup>0</sup> 0 8 <sup>e</sup>	2910.43869	418	02 <sup>2</sup> 0 33 <sup>f</sup>	3088.91349	478	10 <sup>0</sup> 0 0 <sup>e</sup>	3311.47708
299	01 <sup>1</sup> 0 37 <sup>e</sup>	2784.30730	359	01 <sup>1</sup> 1 8 <sup>e</sup>	2911.25258	419	04 <sup>2</sup> 0 13 <sup>f</sup>	3089.75836	479	04 <sup>0</sup> 0 18 <sup>e</sup>	3312.17381
300	00 <sup>0</sup> 0 43 <sup>e</sup>	2786.39986	360	01 <sup>1</sup> 1 8 <sup>f</sup>	2911.78941	420	04 <sup>2</sup> 0 13 <sup>e</sup>	3090.14548	480	03 <sup>1</sup> 0 28 <sup>e</sup>	3313.94271

TABLE VI. The  $\text{H}^{12}\text{C}^{14}\text{N}$  rovibrational levels in  $\text{cm}^{-1}$ .

<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>
481	10 <sup>0</sup> 1 <sup>e</sup>	3314.41267	541	04 <sup>2</sup> 0 21 <sup>f</sup>	3506.99312	601	05 <sup>3</sup> 0 7 <sup>e</sup>	3609.45187	661	02 <sup>0</sup> 0 39 <sup>e</sup>	3715.29451
482	04 <sup>4</sup> 0 17 <sup>f</sup>	3319.68800	542	02 <sup>2</sup> 0 37 <sup>f</sup>	3508.48850	602	05 <sup>3</sup> 0 7 <sup>f</sup>	3609.45235	662	04 <sup>2</sup> 0 24 <sup>e</sup>	3715.95470
483	04 <sup>4</sup> 0 17 <sup>e</sup>	3319.68874	543	04 <sup>2</sup> 0 21 <sup>e</sup>	3509.26327	603	01 <sup>1</sup> 1 23 <sup>e</sup>	3614.93412	663	05 <sup>5</sup> 0 9 <sup>f</sup>	3721.01347
484	00 <sup>0</sup> 0 47 <sup>e</sup>	3320.09331	544	02 <sup>0</sup> 1 2 <sup>e</sup>	3510.97384	604	04 <sup>4</sup> 0 22 <sup>f</sup>	3617.48748	664	05 <sup>5</sup> 0 9 <sup>e</sup>	3721.01347
485	10 <sup>0</sup> 0 2 <sup>e</sup>	3320.28377	545	01 <sup>1</sup> 0 43 <sup>f</sup>	3511.80201	605	04 <sup>4</sup> 0 22 <sup>e</sup>	3617.49319	665	05 <sup>3</sup> 0 11 <sup>e</sup>	3723.14671
486	03 <sup>1</sup> 0 28 <sup>f</sup>	3325.94209	546	05 <sup>1</sup> 0 3 <sup>e</sup>	3512.94454	606	03 <sup>3</sup> 0 31 <sup>e</sup>	3617.88539	666	05 <sup>3</sup> 0 11 <sup>f</sup>	3723.15364
487	04 <sup>2</sup> 0 18 <sup>f</sup>	3328.26504	547	05 <sup>1</sup> 0 3 <sup>f</sup>	3513.23045	607	03 <sup>3</sup> 0 31 <sup>f</sup>	3618.58773	667	05 <sup>1</sup> 0 12 <sup>e</sup>	3726.75335
488	10 <sup>0</sup> 0 3 <sup>e</sup>	3329.09025	548	02 <sup>2</sup> 0 37 <sup>e</sup>	3514.08012	608	01 <sup>1</sup> 1 23 <sup>f</sup>	3619.03735	668	05 <sup>1</sup> 0 12 <sup>f</sup>	3730.45139
489	04 <sup>2</sup> 0 18 <sup>e</sup>	3329.57227	549	02 <sup>0</sup> 1 3 <sup>e</sup>	3519.82609	609	10 <sup>0</sup> 0 14 <sup>e</sup>	3619.58755	669	02 <sup>0</sup> 1 12 <sup>e</sup>	3732.13002
490	10 <sup>0</sup> 0 4 <sup>e</sup>	3340.83190	550	05 <sup>1</sup> 0 4 <sup>e</sup>	3524.83041	610	02 <sup>2</sup> 0 38 <sup>f</sup>	3620.68663	670	02 <sup>2</sup> 0 39 <sup>f</sup>	3735.80113
491	03 <sup>3</sup> 0 28 <sup>e</sup>	3350.71601	551	05 <sup>1</sup> 0 4 <sup>f</sup>	3525.30687	611	02 <sup>2</sup> 1 8 <sup>f</sup>	3623.03470	671	00 <sup>0</sup> 1 33 <sup>e</sup>	3740.43460
492	03 <sup>3</sup> 0 28 <sup>f</sup>	3351.10788	552	02 <sup>2</sup> 1 2 <sup>f</sup>	3525.72003	612	02 <sup>2</sup> 1 8 <sup>e</sup>	3623.05427	672	02 <sup>2</sup> 0 39 <sup>e</sup>	3742.37030
493	10 <sup>0</sup> 0 5 <sup>e</sup>	3355.50844	553	02 <sup>2</sup> 1 2 <sup>e</sup>	3525.72013	613	04 <sup>0</sup> 0 23 <sup>e</sup>	3623.47036	673	02 <sup>2</sup> 1 12 <sup>f</sup>	3746.85148
494	01 <sup>1</sup> 1 19 <sup>e</sup>	3362.93652	554	03 <sup>3</sup> 0 30 <sup>e</sup>	3525.87769	614	02 <sup>2</sup> 0 38 <sup>e</sup>	3626.75710	674	02 <sup>2</sup> 1 12 <sup>e</sup>	3746.94455
495	01 <sup>1</sup> 1 19 <sup>f</sup>	3365.76695	555	03 <sup>3</sup> 0 30 <sup>f</sup>	3526.46038	615	01 <sup>1</sup> 0 44 <sup>e</sup>	3627.01416	675	00 <sup>0</sup> 0 50 <sup>e</sup>	3750.59440
496	04 <sup>0</sup> 0 19 <sup>e</sup>	3368.56760	556	02 <sup>0</sup> 1 4 <sup>e</sup>	3531.62830	616	05 <sup>1</sup> 0 9 <sup>e</sup>	3628.79312	676	05 <sup>5</sup> 0 10 <sup>f</sup>	3750.85725
497	01 <sup>1</sup> 0 42 <sup>e</sup>	3371.76249	557	02 <sup>2</sup> 1 3 <sup>f</sup>	3534.56791	617	05 <sup>1</sup> 0 9 <sup>f</sup>	3630.93306	677	05 <sup>5</sup> 0 10 <sup>e</sup>	3750.85725
498	00 <sup>0</sup> 1 29 <sup>e</sup>	3371.92436	558	02 <sup>2</sup> 1 3 <sup>e</sup>	3534.56838	618	05 <sup>5</sup> 0 5 <sup>f</sup>	3631.47318	678	04 <sup>4</sup> 0 24 <sup>f</sup>	3757.40410
499	10 <sup>0</sup> 0 6 <sup>e</sup>	3373.11953	559	05 <sup>1</sup> 0 5 <sup>e</sup>	3539.68646	619	05 <sup>5</sup> 0 5 <sup>e</sup>	3631.47318	679	04 <sup>4</sup> 0 24 <sup>e</sup>	3757.41552
500	04 <sup>4</sup> 0 18 <sup>f</sup>	3373.30237	560	10 <sup>0</sup> 0 12 <sup>e</sup>	3540.38345	620	05 <sup>3</sup> 0 8 <sup>e</sup>	3633.38837	680	01 <sup>1</sup> 1 25 <sup>e</sup>	3758.43655
501	04 <sup>4</sup> 0 18 <sup>e</sup>	3373.30352	561	05 <sup>1</sup> 0 5 <sup>f</sup>	3540.40101	621	05 <sup>3</sup> 0 8 <sup>f</sup>	3633.38944	681	01 <sup>1</sup> 0 45 <sup>e</sup>	3758.97162
502	02 <sup>0</sup> 0 36 <sup>e</sup>	3379.97629	562	05 <sup>3</sup> 0 3 <sup>e</sup>	3543.62490	622	02 <sup>0</sup> 1 9 <sup>e</sup>	3634.85972	682	05 <sup>3</sup> 0 12 <sup>e</sup>	3759.04819
503	04 <sup>2</sup> 0 19 <sup>f</sup>	3384.87634	563	05 <sup>3</sup> 0 3 <sup>f</sup>	3543.62491	623	04 <sup>2</sup> 0 23 <sup>f</sup>	3640.95390	683	05 <sup>3</sup> 0 12 <sup>f</sup>	3759.05974
504	01 <sup>1</sup> 0 42 <sup>f</sup>	3385.00414	564	02 <sup>2</sup> 1 4 <sup>f</sup>	3546.36475	624	01 <sup>1</sup> 0 44 <sup>f</sup>	3641.50277	684	10 <sup>0</sup> 0 17 <sup>e</sup>	3760.35334
505	04 <sup>2</sup> 0 19 <sup>e</sup>	3386.46679	565	02 <sup>2</sup> 1 4 <sup>e</sup>	3546.36615	625	00 <sup>0</sup> 1 32 <sup>e</sup>	3643.95570	685	01 <sup>1</sup> 1 25 <sup>f</sup>	3763.26267
506	10 <sup>0</sup> 0 7 <sup>e</sup>	3393.66475	566	02 <sup>0</sup> 1 5 <sup>e</sup>	3546.37982	626	04 <sup>2</sup> 0 23 <sup>e</sup>	3644.06067	686	05 <sup>1</sup> 0 13 <sup>e</sup>	3765.32783
507	02 <sup>2</sup> 0 36 <sup>f</sup>	3399.20949	567	01 <sup>1</sup> 1 22 <sup>e</sup>	3547.55641	627	05 <sup>5</sup> 0 6 <sup>f</sup>	3649.38231	687	04 <sup>0</sup> 0 25 <sup>e</sup>	3768.48404
508	03 <sup>1</sup> 0 29 <sup>e</sup>	3399.49077	568	00 <sup>0</sup> 1 31 <sup>e</sup>	3550.37622	628	05 <sup>5</sup> 0 6 <sup>e</sup>	3649.38231	688	05 <sup>1</sup> 0 13 <sup>f</sup>	3769.63568
509	02 <sup>2</sup> 0 36 <sup>e</sup>	3404.34242	569	01 <sup>1</sup> 1 22 <sup>f</sup>	3551.31975	629	02 <sup>2</sup> 1 9 <sup>f</sup>	3649.57047	689	02 <sup>0</sup> 1 13 <sup>e</sup>	3770.43218
510	03 <sup>1</sup> 0 29 <sup>f</sup>	3412.27766	570	04 <sup>4</sup> 0 21 <sup>f</sup>	3551.98377	630	02 <sup>2</sup> 1 9 <sup>e</sup>	3649.60122	690	03 <sup>1</sup> 0 33 <sup>e</sup>	3770.89213
511	10 <sup>0</sup> 0 8 <sup>e</sup>	3417.14362	571	04 <sup>4</sup> 0 21 <sup>e</sup>	3551.98771	631	05 <sup>1</sup> 0 10 <sup>e</sup>	3658.48425	691	01 <sup>1</sup> 0 45 <sup>f</sup>	3774.10329
512	01 <sup>1</sup> 1 20 <sup>e</sup>	3421.55610	572	04 <sup>0</sup> 0 22 <sup>e</sup>	3555.35084	632	05 <sup>3</sup> 0 9 <sup>e</sup>	3660.31650	692	05 <sup>5</sup> 0 11 <sup>f</sup>	3783.68370
513	01 <sup>1</sup> 1 20 <sup>f</sup>	3424.68300	573	05 <sup>3</sup> 0 4 <sup>e</sup>	3555.59360	633	05 <sup>3</sup> 0 9 <sup>f</sup>	3660.31863	693	05 <sup>5</sup> 0 11 <sup>e</sup>	3783.68370
514	04 <sup>0</sup> 0 20 <sup>e</sup>	3427.89703	574	05 <sup>3</sup> 0 4 <sup>f</sup>	3555.59361	634	05 <sup>1</sup> 0 10 <sup>f</sup>	3661.09767	694	02 <sup>2</sup> 1 13 <sup>f</sup>	3785.16705
515	04 <sup>4</sup> 0 19 <sup>f</sup>	3429.89033	575	05 <sup>1</sup> 0 6 <sup>e</sup>	3557.51184	635	10 <sup>0</sup> 0 15 <sup>e</sup>	3663.58257	695	02 <sup>2</sup> 1 13 <sup>e</sup>	3785.29377
516	04 <sup>4</sup> 0 19 <sup>e</sup>	3429.89211	576	05 <sup>1</sup> 0 6 <sup>f</sup>	3558.51194	636	02 <sup>0</sup> 1 10 <sup>e</sup>	3664.34192	696	04 <sup>2</sup> 0 25 <sup>f</sup>	3786.73943
517	03 <sup>3</sup> 0 29 <sup>e</sup>	3436.82057	577	02 <sup>2</sup> 1 5 <sup>f</sup>	3561.11024	637	05 <sup>5</sup> 0 7 <sup>f</sup>	3670.27562	697	03 <sup>1</sup> 0 33 <sup>f</sup>	3786.94903
518	03 <sup>3</sup> 0 29 <sup>f</sup>	3437.30033	578	02 <sup>2</sup> 1 5 <sup>e</sup>	3561.11351	638	05 <sup>5</sup> 0 7 <sup>e</sup>	3670.27562	698	04 <sup>2</sup> 0 25 <sup>e</sup>	3790.84213
519	10 <sup>0</sup> 0 9 <sup>e</sup>	3443.55558	579	02 <sup>0</sup> 1 6 <sup>e</sup>	3564.07980	639	03 <sup>1</sup> 0 32 <sup>e</sup>	3673.66535	699	05 <sup>3</sup> 0 13 <sup>e</sup>	3797.94005
520	04 <sup>2</sup> 0 20 <sup>f</sup>	3444.45309	580	05 <sup>3</sup> 0 5 <sup>e</sup>	3570.55437	640	02 <sup>2</sup> 1 10 <sup>f</sup>	3679.05236	700	05 <sup>3</sup> 0 13 <sup>f</sup>	3797.95854
521	04 <sup>2</sup> 0 20 <sup>e</sup>	3446.36412	581	05 <sup>3</sup> 0 5 <sup>f</sup>	3570.55443	641	02 <sup>2</sup> 1 10 <sup>e</sup>	3679.09847	701	05 <sup>1</sup> 0 14 <sup>e</sup>	3806.85978
522	00 <sup>0</sup> 1 30 <sup>e</sup>	3459.69838	582	04 <sup>2</sup> 0 22 <sup>f</sup>	3572.49418	642	01 <sup>1</sup> 1 24 <sup>e</sup>	3685.22806	702	03 <sup>3</sup> 0 33 <sup>e</sup>	3810.74425
523	00 <sup>0</sup> 0 48 <sup>e</sup>	3460.71999	583	04 <sup>2</sup> 0 22 <sup>e</sup>	3575.16275	643	04 <sup>4</sup> 0 23 <sup>f</sup>	3685.96126	703	02 <sup>0</sup> 1 14 <sup>e</sup>	3811.67037
524	10 <sup>0</sup> 0 10 <sup>e</sup>	3472.90001	584	05 <sup>1</sup> 0 7 <sup>e</sup>	3578.30554	644	04 <sup>4</sup> 0 23 <sup>e</sup>	3685.96940	704	03 <sup>3</sup> 0 33 <sup>f</sup>	3811.74275
525	01 <sup>1</sup> 1 21 <sup>e</sup>	3483.09656	585	10 <sup>0</sup> 0 13 <sup>e</sup>	3578.52086	645	03 <sup>1</sup> 0 32 <sup>f</sup>	3688.89037	705	05 <sup>1</sup> 0 14 <sup>f</sup>	3811.82124
526	01 <sup>1</sup> 1 21 <sup>f</sup>	3486.53443	586	02 <sup>2</sup> 1 6 <sup>f</sup>	3578.80404	646	01 <sup>1</sup> 1 24 <sup>f</sup>	3689.68556	706	10 <sup>0</sup> 0 18 <sup>e</sup>	3813.12681
527	03 <sup>1</sup> 0 30 <sup>e</sup>	3487.96218	587	02 <sup>2</sup> 1 6 <sup>e</sup>	3578.81056	647	05 <sup>3</sup> 0 10 <sup>e</sup>	3690.23604	707	05 <sup>5</sup> 0 12 <sup>f</sup>	3819.49233
528	02 <sup>0</sup> 0 37 <sup>e</sup>	3488.84980	588	03 <sup>1</sup> 0 31 <sup>e</sup>	3579.35453	648	05 <sup>3</sup> 0 10 <sup>f</sup>	3690.23999	708	05 <sup>5</sup> 0 12 <sup>e</sup>	3819.49233
529	04 <sup>4</sup> 0 20 <sup>f</sup>	3489.45109	589	05 <sup>1</sup> 0 7 <sup>f</sup>	3579.63852	649	05 <sup>1</sup> 0 11 <sup>e</sup>	3691.13822	709	02 <sup>2</sup> 1 14 <sup>f</sup>	3826.42537
530	04 <sup>4</sup> 0 20 <sup>e</sup>	3489.45376	590	02 <sup>0</sup> 1 7 <sup>e</sup>	3584.72725	650	05 <sup>5</sup> 0 8 <sup>f</sup>	3694.15279	710	02 <sup>2</sup> 1 14 <sup>e</sup>	3826.59399
531	04 <sup>0</sup> 0 21 <sup>e</sup>	3490.15896	591	05 <sup>3</sup> 0 6 <sup>e</sup>	3588.50716	651	05 <sup>5</sup> 0 8 <sup>e</sup>	3694.15279	711	04 <sup>4</sup> 0 25 <sup>f</sup>	3831.81494
532	01 <sup>1</sup> 0 43 <sup>e</sup>	3497.94343	592	05 <sup>3</sup> 0 6 <sup>f</sup>	3588.50735	652	05 <sup>1</sup> 0 11 <sup>f</sup>	3694.27121	712	04 <sup>4</sup> 0 25 <sup>e</sup>	3831.83076
533	05 <sup>1</sup> 0 1 <sup>e</sup>	3498.08590	593	03 <sup>1</sup> 0 31 <sup>f</sup>	3593.75605	653	04 <sup>0</sup> 0 24 <sup>e</sup>	3694.51541	713	02 <sup>0</sup> 0 40 <sup>e</sup>	3832.86081
534	05 <sup>1</sup> 0 1 <sup>f</sup>	3498.13356	594	02 <sup>2</sup> 1 7 <sup>f</sup>	3599.44569	654	02 <sup>0</sup> 1 11 <sup>e</sup>	3696.76595	714	01 <sup>1</sup> 1 26 <sup>e</sup>	3834.55783
535	03 <sup>1</sup> 0 30 <sup>f</sup>	3501.55038	595	02 <sup>2</sup> 1 7 <sup>e</sup>	3599.45744	655	10 <sup>0</sup> 0 16 <sup>e</sup>	3710.50487	715	01 <sup>1</sup> 1 26 <sup>f</sup>	3839.76684
536	02 <sup>0</sup> 1 0 <sup>e</sup>	3502.12110	596	02 <sup>0</sup> 0 38 <sup>e</sup>	3600.62335	656	02 <sup>2</sup> 1 11 <sup>f</sup>	3711.47963	716	00 <sup>0</sup> 1 34 <sup>e</sup>	3839.81063
537	05 <sup>1</sup> 0 2 <sup>e</sup>	3504.02953	597	05 <sup>1</sup> 0 8 <sup>e</sup>	3602.06640	657	02 <sup>2</sup> 1 11 <sup>e</sup>	3711.54618	717	05 <sup>3</sup> 0 14 <sup>e</sup>	3839.82181
538	05 <sup>1</sup> 0 2 <sup>f</sup>	3504.17250	598	05 <sup>1</sup> 0 8 <sup>f</sup>	3603.77942	658	04 <sup>2</sup> 0 24 <sup>f</sup>	3712.36984	718	05 <sup>3</sup> 0 14 <sup>f</sup>	3839.85038
539	02 <sup>0</sup> 1 1 <sup>e</sup>	3505.07207	599	00 <sup>0</sup> 0 49 <sup>e</sup>	3604.22149	659	03 <sup>3</sup> 0 32 <sup>e</sup>	3712.84164	719	04 <sup>0</sup> 0 26 <sup>e</sup>	3845.37440
540	10 <sup>0</sup> 0 11 <sup>e</sup>	3505.17622	600	02 <sup>0</sup> 1 8 <sup>e</sup>	3608.32100	660	03 <sup>3</sup> 0 32 <sup>f</sup>	3713.68201	720	05 <sup>1</sup> 0 15 <sup>e</sup>	3851.34710

TABLE VII. The H<sup>12</sup>C<sup>14</sup>N rovibrational levels in cm<sup>-1</sup>.

<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>
721	02 <sup>2</sup> 0 40 <sup>f</sup>	3853.82920	781	02 <sup>0</sup> 1 18 <sup>e</sup>	4005.93988	841	05 <sup>1</sup> 0 20 <sup>f</sup>	4127.76283	901	06 <sup>2</sup> 0 4 <sup>e</sup>	4220.01096
722	02 <sup>0</sup> 1 15 <sup>e</sup>	3855.84280	782	11 <sup>1</sup> 0 1 <sup>e</sup>	4007.09767	842	02 <sup>2</sup> 1 20 <sup>f</sup>	4135.71229	902	02 <sup>2</sup> 0 43 <sup>f</sup>	4225.36565
723	05 <sup>1</sup> 0 15 <sup>f</sup>	3857.00493	783	11 <sup>1</sup> 0 1 <sup>f</sup>	4007.11288	843	11 <sup>1</sup> 0 9 <sup>e</sup>	4136.23724	903	03 <sup>1</sup> 1 4 <sup>e</sup>	4230.63254
724	05 <sup>5</sup> 0 13 <sup>f</sup>	3858.28260	784	04 <sup>0</sup> 0 28 <sup>e</sup>	4007.91333	844	02 <sup>2</sup> 1 20 <sup>e</sup>	4136.37084	904	03 <sup>1</sup> 1 4 <sup>f</sup>	4230.93935
725	05 <sup>5</sup> 0 13 <sup>e</sup>	3858.28260	785	05 <sup>1</sup> 0 18 <sup>f</sup>	4010.50873	845	11 <sup>1</sup> 0 9 <sup>f</sup>	4136.92107	905	03 <sup>3</sup> 0 37 <sup>e</sup>	4231.77202
726	02 <sup>2</sup> 0 40 <sup>e</sup>	3860.91654	786	11 <sup>1</sup> 0 2 <sup>e</sup>	4012.96863	846	05 <sup>5</sup> 0 19 <sup>e</sup>	4153.60389	906	11 <sup>1</sup> 0 12 <sup>e</sup>	4233.06235
727	04 <sup>2</sup> 0 26 <sup>f</sup>	3864.06005	787	11 <sup>1</sup> 0 2 <sup>f</sup>	4013.01426	847	05 <sup>5</sup> 0 19 <sup>f</sup>	4153.60395	907	03 <sup>3</sup> 0 37 <sup>f</sup>	4233.63535
728	04 <sup>2</sup> 0 26 <sup>e</sup>	3868.71993	788	03 <sup>3</sup> 0 35 <sup>e</sup>	4015.37952	848	05 <sup>3</sup> 0 20 <sup>e</sup>	4153.85850	908	02 <sup>2</sup> 0 43 <sup>e</sup>	4234.12083
729	10 <sup>0</sup> 0 19 <sup>e</sup>	3868.82404	789	03 <sup>3</sup> 0 35 <sup>f</sup>	4016.76099	849	05 <sup>3</sup> 0 20 <sup>f</sup>	4154.08883	909	11 <sup>1</sup> 0 12 <sup>f</sup>	4234.24668
730	02 <sup>2</sup> 1 15 <sup>f</sup>	3870.62545	790	02 <sup>2</sup> 1 18 <sup>f</sup>	4020.86487	850	00 <sup>0</sup> 1 37 <sup>e</sup>	4155.29748	910	00 <sup>0</sup> 2 6 <sup>e</sup>	4234.30192
731	02 <sup>2</sup> 1 15 <sup>e</sup>	3870.84537	791	02 <sup>2</sup> 1 18 <sup>e</sup>	4021.30717	851	04 <sup>4</sup> 0 29 <sup>f</sup>	4159.11493	911	06 <sup>2</sup> 0 5 <sup>f</sup>	4235.01400
732	03 <sup>1</sup> 0 34 <sup>e</sup>	3871.03232	792	11 <sup>1</sup> 0 3 <sup>e</sup>	4021.77489	852	04 <sup>0</sup> 0 29 <sup>e</sup>	4159.16659	912	06 <sup>2</sup> 0 5 <sup>e</sup>	4235.03529
733	05 <sup>3</sup> 0 15 <sup>e</sup>	3884.69286	793	11 <sup>1</sup> 0 3 <sup>f</sup>	4021.86616	853	11 <sup>1</sup> 0 10 <sup>e</sup>	4165.58086	913	06 <sup>0</sup> 0 6 <sup>e</sup>	4237.66070
734	05 <sup>3</sup> 0 15 <sup>f</sup>	3884.73569	794	04 <sup>2</sup> 0 28 <sup>f</sup>	4027.54333	854	11 <sup>1</sup> 0 10 <sup>f</sup>	4166.41644	914	05 <sup>1</sup> 0 22 <sup>e</sup>	4245.32292
735	03 <sup>1</sup> 0 34 <sup>f</sup>	3887.92766	795	01 <sup>1</sup> 0 47 <sup>e</sup>	4031.53411	855	01 <sup>1</sup> 1 30 <sup>e</sup>	4168.13326	915	03 <sup>1</sup> 1 5 <sup>e</sup>	4245.34488
736	01 <sup>1</sup> 0 46 <sup>e</sup>	3893.81267	796	04 <sup>2</sup> 0 28 <sup>e</sup>	4033.43292	856	01 <sup>1</sup> 0 48 <sup>e</sup>	4172.13267	916	03 <sup>1</sup> 1 5 <sup>f</sup>	4245.80503
737	05 <sup>1</sup> 0 16 <sup>e</sup>	3898.78726	797	11 <sup>1</sup> 0 4 <sup>e</sup>	4033.51625	857	00 <sup>0</sup> 2 0 <sup>e</sup>	4173.07091	917	02 <sup>0</sup> 1 22 <sup>e</sup>	4246.99907
738	00 <sup>0</sup> 0 51 <sup>e</sup>	3899.83529	798	11 <sup>1</sup> 0 4 <sup>f</sup>	4033.66834	858	06 <sup>0</sup> 0 0 <sup>e</sup>	4174.60860	918	04 <sup>4</sup> 0 30 <sup>f</sup>	4248.34768
739	05 <sup>5</sup> 0 14 <sup>f</sup>	3900.05395	799	05 <sup>3</sup> 0 18 <sup>e</sup>	4037.23411	859	01 <sup>1</sup> 1 30 <sup>f</sup>	4175.01566	919	04 <sup>4</sup> 0 30 <sup>e</sup>	4248.41536
740	05 <sup>5</sup> 0 14 <sup>e</sup>	3900.05395	800	05 <sup>3</sup> 0 18 <sup>f</sup>	4037.35875	860	00 <sup>0</sup> 2 1 <sup>e</sup>	4175.98690	920	03 <sup>3</sup> 1 3 <sup>f</sup>	4248.56689
741	02 <sup>0</sup> 1 16 <sup>e</sup>	3902.94676	801	05 <sup>5</sup> 0 17 <sup>e</sup>	4043.24810	861	06 <sup>0</sup> 0 1 <sup>e</sup>	4177.61338	921	03 <sup>3</sup> 1 3 <sup>e</sup>	4248.56689
742	05 <sup>1</sup> 0 16 <sup>f</sup>	3905.18331	802	05 <sup>5</sup> 0 17 <sup>f</sup>	4043.24811	862	05 <sup>1</sup> 0 21 <sup>e</sup>	4180.21028	922	06 <sup>2</sup> 0 6 <sup>f</sup>	4253.02679
743	04 <sup>4</sup> 0 26 <sup>f</sup>	3909.19265	803	00 <sup>0</sup> 1 36 <sup>e</sup>	4047.24454	863	00 <sup>0</sup> 2 2 <sup>e</sup>	4181.81883	923	06 <sup>2</sup> 0 6 <sup>e</sup>	4253.06933
744	04 <sup>4</sup> 0 26 <sup>e</sup>	3909.21428	804	01 <sup>1</sup> 0 47 <sup>f</sup>	4047.99066	864	04 <sup>0</sup> 0 30 <sup>e</sup>	4182.11843	924	00 <sup>0</sup> 2 7 <sup>e</sup>	4254.70997
745	01 <sup>1</sup> 0 46 <sup>f</sup>	3909.60035	805	11 <sup>1</sup> 0 5 <sup>e</sup>	4048.19242	865	02 <sup>0</sup> 1 21 <sup>e</sup>	4182.35496	925	05 <sup>1</sup> 0 22 <sup>f</sup>	4256.90635
746	03 <sup>3</sup> 0 34 <sup>e</sup>	3911.59100	806	11 <sup>1</sup> 0 5 <sup>f</sup>	4048.42054	866	06 <sup>0</sup> 0 2 <sup>e</sup>	4183.62226	926	06 <sup>0</sup> 0 7 <sup>e</sup>	4258.65563
747	03 <sup>3</sup> 0 34 <sup>f</sup>	3912.76933	807	00 <sup>0</sup> 0 52 <sup>e</sup>	4051.94064	867	03 <sup>1</sup> 0 37 <sup>e</sup>	4188.90705	927	01 <sup>1</sup> 1 31 <sup>e</sup>	4258.78970
748	01 <sup>1</sup> 1 27 <sup>e</sup>	3913.59007	808	10 <sup>0</sup> 0 22 <sup>e</sup>	4053.44477	868	01 <sup>1</sup> 0 48 <sup>f</sup>	4189.27086	928	03 <sup>3</sup> 1 4 <sup>e</sup>	4260.38623
749	02 <sup>2</sup> 1 16 <sup>f</sup>	3917.76618	809	05 <sup>1</sup> 0 19 <sup>e</sup>	4058.80506	869	00 <sup>0</sup> 2 3 <sup>e</sup>	4190.56654	929	03 <sup>3</sup> 1 4 <sup>f</sup>	4260.38624
750	02 <sup>2</sup> 1 16 <sup>e</sup>	3918.04801	810	02 <sup>0</sup> 1 19 <sup>e</sup>	4061.82411	870	05 <sup>1</sup> 0 21 <sup>f</sup>	4190.85113	930	02 <sup>2</sup> 1 22 <sup>f</sup>	4262.29557
751	01 <sup>1</sup> 1 27 <sup>f</sup>	3919.19622	811	11 <sup>1</sup> 0 6 <sup>e</sup>	4065.80306	871	10 <sup>0</sup> 0 24 <sup>e</sup>	4191.11813	931	03 <sup>1</sup> 1 6 <sup>e</sup>	4262.99849
752	04 <sup>0</sup> 0 27 <sup>e</sup>	3925.18473	812	11 <sup>1</sup> 0 6 <sup>f</sup>	4066.12237	872	06 <sup>0</sup> 0 3 <sup>e</sup>	4192.63384	932	02 <sup>2</sup> 1 22 <sup>e</sup>	4263.23660
753	10 <sup>0</sup> 0 20 <sup>e</sup>	3927.44370	813	05 <sup>1</sup> 0 19 <sup>f</sup>	4067.64695	873	02 <sup>2</sup> 1 21 <sup>f</sup>	4197.53766	933	03 <sup>1</sup> 1 6 <sup>f</sup>	4263.64259
754	05 <sup>3</sup> 0 16 <sup>e</sup>	3932.55249	814	04 <sup>4</sup> 0 28 <sup>f</sup>	4072.84392	874	11 <sup>1</sup> 0 11 <sup>e</sup>	4197.85615	934	10 <sup>0</sup> 0 25 <sup>e</sup>	4264.32791
755	05 <sup>3</sup> 0 16 <sup>f</sup>	3932.61504	815	04 <sup>4</sup> 0 28 <sup>e</sup>	4072.88299	875	02 <sup>2</sup> 1 21 <sup>e</sup>	4198.32870	935	06 <sup>4</sup> 0 4 <sup>e</sup>	4265.99806
756	00 <sup>0</sup> 1 35 <sup>e</sup>	3942.08142	816	02 <sup>0</sup> 0 42 <sup>e</sup>	4076.66854	876	11 <sup>1</sup> 0 11 <sup>f</sup>	4198.85857	936	06 <sup>4</sup> 0 4 <sup>f</sup>	4265.99806
757	04 <sup>2</sup> 0 27 <sup>f</sup>	3944.32895	817	02 <sup>2</sup> 1 19 <sup>f</sup>	4076.82114	877	06 <sup>2</sup> 0 2 <sup>f</sup>	4198.98250	937	01 <sup>1</sup> 1 31 <sup>f</sup>	4266.12560
758	05 <sup>5</sup> 0 15 <sup>f</sup>	3944.80576	818	02 <sup>2</sup> 1 19 <sup>e</sup>	4077.36354	878	06 <sup>2</sup> 0 2 <sup>e</sup>	4198.98311	938	00 <sup>0</sup> 1 38 <sup>e</sup>	4266.23768
759	05 <sup>5</sup> 0 15 <sup>e</sup>	3944.80576	819	03 <sup>1</sup> 0 36 <sup>e</sup>	4080.04246	879	00 <sup>0</sup> 2 4 <sup>e</sup>	4202.22982	939	11 <sup>1</sup> 0 13 <sup>e</sup>	4271.19861
760	05 <sup>1</sup> 0 17 <sup>e</sup>	3949.17884	820	01 <sup>1</sup> 1 29 <sup>e</sup>	4080.37979	880	04 <sup>2</sup> 0 30 <sup>f</sup>	4202.79682	940	11 <sup>1</sup> 0 13 <sup>f</sup>	4272.57988
761	04 <sup>2</sup> 0 27 <sup>e</sup>	3949.58473	821	11 <sup>1</sup> 0 7 <sup>e</sup>	4086.34775	881	02 <sup>0</sup> 0 43 <sup>e</sup>	4202.90466	941	04 <sup>0</sup> 0 31 <sup>e</sup>	4273.59142
762	02 <sup>0</sup> 1 17 <sup>e</sup>	3952.97964	822	11 <sup>1</sup> 0 7 <sup>f</sup>	4086.77342	882	03 <sup>1</sup> 1 1 <sup>e</sup>	4204.14805	942	06 <sup>2</sup> 0 7 <sup>f</sup>	4274.03922
763	02 <sup>0</sup> 0 41 <sup>e</sup>	3953.31969	823	01 <sup>1</sup> 1 29 <sup>f</sup>	4086.82269	883	03 <sup>1</sup> 1 1 <sup>f</sup>	4204.17874	943	06 <sup>2</sup> 0 7 <sup>e</sup>	4274.11566
764	05 <sup>1</sup> 0 17 <sup>f</sup>	3956.35261	824	04 <sup>0</sup> 0 29 <sup>e</sup>	4093.55848	884	06 <sup>0</sup> 0 4 <sup>e</sup>	4204.64605	944	03 <sup>3</sup> 1 5 <sup>e</sup>	4275.16012
765	02 <sup>2</sup> 1 17 <sup>f</sup>	3967.84640	825	05 <sup>3</sup> 0 19 <sup>e</sup>	4094.05406	885	00 <sup>0</sup> 0 53 <sup>e</sup>	4206.90687	945	03 <sup>3</sup> 1 5 <sup>f</sup>	4275.16014
766	02 <sup>2</sup> 1 17 <sup>e</sup>	3968.20195	826	05 <sup>3</sup> 0 19 <sup>f</sup>	4094.22495	886	06 <sup>2</sup> 0 3 <sup>f</sup>	4207.99111	946	05 <sup>3</sup> 0 21 <sup>e</sup>	4275.86677
767	03 <sup>1</sup> 0 35 <sup>e</sup>	3974.08331	827	05 <sup>5</sup> 0 18 <sup>e</sup>	4096.93720	887	06 <sup>2</sup> 0 3 <sup>e</sup>	4207.99416	947	05 <sup>5</sup> 0 21 <sup>f</sup>	4275.86692
768	02 <sup>2</sup> 0 41 <sup>f</sup>	3974.76796	828	05 <sup>5</sup> 0 18 <sup>f</sup>	4096.93723	888	03 <sup>1</sup> 0 37 <sup>f</sup>	4208.34057	948	00 <sup>0</sup> 2 8 <sup>e</sup>	4278.03205
769	02 <sup>2</sup> 0 41 <sup>e</sup>	3982.39259	829	02 <sup>2</sup> 0 42 <sup>f</sup>	4098.61445	889	03 <sup>1</sup> 1 2 <sup>e</sup>	4210.03375	949	06 <sup>4</sup> 0 5 <sup>e</sup>	4280.98544
770	05 <sup>3</sup> 0 17 <sup>e</sup>	3983.39990	830	03 <sup>1</sup> 0 36 <sup>f</sup>	4098.62766	890	04 <sup>2</sup> 0 30 <sup>e</sup>	4210.06369	950	06 <sup>4</sup> 0 5 <sup>f</sup>	4280.98544
771	05 <sup>3</sup> 0 17 <sup>f</sup>	3983.48911	831	02 <sup>2</sup> 0 42 <sup>e</sup>	4106.79515	891	03 <sup>1</sup> 1 2 <sup>f</sup>	4210.12581	951	05 <sup>3</sup> 0 22 <sup>e</sup>	4282.41517
772	10 <sup>0</sup> 0 21 <sup>e</sup>	3988.98443	832	11 <sup>1</sup> 0 8 <sup>e</sup>	4109.82600	892	05 <sup>5</sup> 0 20 <sup>e</sup>	4213.24737	952	06 <sup>0</sup> 0 8 <sup>e</sup>	4282.63630
773	04 <sup>4</sup> 0 27 <sup>f</sup>	3989.53606	833	11 <sup>1</sup> 0 8 <sup>f</sup>	4110.37318	893	05 <sup>5</sup> 0 20 <sup>f</sup>	4213.24746	953	05 <sup>3</sup> 0 22 <sup>f</sup>	4282.81488
774	04 <sup>4</sup> 0 27 <sup>e</sup>	3989.56529	834	04 <sup>2</sup> 0 29 <sup>f</sup>	4113.70027	894	05 <sup>3</sup> 0 21 <sup>e</sup>	4216.64605	954	03 <sup>1</sup> 1 7 <sup>e</sup>	4283.59275
775	03 <sup>1</sup> 0 35 <sup>f</sup>	3991.82196	835	05 <sup>1</sup> 0 20 <sup>e</sup>	4118.03634	895	00 <sup>0</sup> 2 5 <sup>e</sup>	4216.80840	955	03 <sup>1</sup> 1 7 <sup>f</sup>	4284.45134
776	05 <sup>5</sup> 0 16 <sup>e</sup>	3992.53737	836	04 <sup>2</sup> 0 29 <sup>e</sup>	4120.26061	896	05 <sup>3</sup> 0 21 <sup>f</sup>	4216.95167	956	03 <sup>3</sup> 1 6 <sup>e</sup>	4292.88836
777	05 <sup>5</sup> 0 16 <sup>f</sup>	3992.53738	837	02 <sup>0</sup> 1 20 <sup>e</sup>	4120.63008	897	03 <sup>1</sup> 1 3 <sup>e</sup>	4218.86202	957	03 <sup>3</sup> 1 6 <sup>f</sup>	4292.88840
778	01 <sup>1</sup> 1 28 <sup>e</sup>	3995.53138	838	10 <sup>0</sup> 0 23 <sup>e</sup>	4120.82320	898	03 <sup>1</sup> 1 3 <sup>f</sup>	4219.04612	958	04 <sup>2</sup> 0 31 <sup>f</sup>	4294.82992
779	01 <sup>1</sup> 1 28 <sup>f</sup>	4001.54884	839	03 <sup>3</sup> 0 36 <sup>e</sup>	4122.10737	899	06 <sup>0</sup> 0 5 <sup>e</sup>	4219.65615	959	06 <sup>2</sup> 0 8 <sup>f</sup>	4298.05014
780	05 <sup>1</sup> 0 18 <sup>e</sup>	4002.51763	840	03 <sup>3</sup> 0 36 <sup>f</sup>	4123.71673	900	06 <sup>2</sup> 0 4 <sup>f</sup>	4220.00183	960	06 <sup>2</sup> 0 8 <sup>e</sup>	4298.17721

TABLE VIII. The  $\text{H}^{12}\text{C}^{14}\text{N}$  rovibrational levels in  $\text{cm}^{-1}$ .

<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>
961	06 <sup>4</sup> 0 6 <sup>e</sup>	4298.97002	1021	06 <sup>6</sup> 0 6 <sup>e</sup>	4375.37604	1081	02 <sup>0</sup> 0 45 <sup>e</sup>	4464.02759	1141	01 <sup>1</sup> 1 34 <sup>f</sup>	4556.93451
962	06 <sup>4</sup> 0 6 <sup>f</sup>	4298.97002	1022	06 <sup>6</sup> 0 6 <sup>f</sup>	4375.37604	1082	04 <sup>0</sup> 0 33 <sup>e</sup>	4465.26909	1142	03 <sup>1</sup> 1 15 <sup>f</sup>	4557.76068
963	03 <sup>1</sup> 0 38 <sup>e</sup>	4300.67435	1023	00 <sup>0</sup> 1 39 <sup>e</sup>	4380.06250	1083	03 <sup>1</sup> 1 13 <sup>e</sup>	4468.86270	1143	11 <sup>1</sup> 0 19 <sup>e</sup>	4561.49196
964	04 <sup>2</sup> 0 31 <sup>e</sup>	4302.83783	1024	05 <sup>1</sup> 0 24 <sup>e</sup>	4384.34995	1084	06 <sup>4</sup> 0 12 <sup>f</sup>	4469.80904	1144	11 <sup>1</sup> 0 19 <sup>f</sup>	4564.36883
965	00 <sup>0</sup> 2 9 <sup>e</sup>	4304.26760	1025	02 <sup>0</sup> 1 24 <sup>e</sup>	4385.03339	1085	06 <sup>4</sup> 0 12 <sup>e</sup>	4469.80929	1145	04 <sup>0</sup> 0 34 <sup>e</sup>	4565.46987
966	03 <sup>1</sup> 1 8 <sup>e</sup>	4307.12689	1026	06 <sup>2</sup> 0 11 <sup>f</sup>	4388.05978	1086	03 <sup>1</sup> 1 13 <sup>f</sup>	4471.64480	1146	00 <sup>0</sup> 2 16 <sup>e</sup>	4569.43184
967	03 <sup>1</sup> 1 8 <sup>f</sup>	4308.23047	1027	06 <sup>2</sup> 0 11 <sup>e</sup>	4388.48560	1087	05 <sup>1</sup> 0 25 <sup>f</sup>	4472.81114	1147	05 <sup>3</sup> 0 26 <sup>e</sup>	4575.27062
968	06 <sup>0</sup> 0 9 <sup>e</sup>	4309.59753	1028	04 <sup>2</sup> 0 32 <sup>f</sup>	4389.79646	1088	02 <sup>2</sup> 1 25 <sup>f</sup>	4474.15258	1148	05 <sup>3</sup> 0 26 <sup>f</sup>	4576.30121
969	11 <sup>1</sup> 0 14 <sup>e</sup>	4312.26404	1029	03 <sup>3</sup> 1 10 <sup>e</sup>	4393.33934	1089	02 <sup>2</sup> 1 25 <sup>e</sup>	4475.65280	1149	03 <sup>3</sup> 0 40 <sup>e</sup>	4578.35994
970	05 <sup>1</sup> 0 23 <sup>e</sup>	4313.37171	1030	03 <sup>3</sup> 1 10 <sup>f</sup>	4393.34029	1090	06 <sup>6</sup> 0 10 <sup>e</sup>	4476.96530	1150	03 <sup>3</sup> 0 40 <sup>f</sup>	4581.15222
971	03 <sup>3</sup> 1 7 <sup>e</sup>	4313.57070	1031	03 <sup>1</sup> 1 11 <sup>e</sup>	4395.35963	1091	06 <sup>6</sup> 0 10 <sup>f</sup>	4476.96530	1151	06 <sup>0</sup> 0 16 <sup>e</sup>	4581.30138
972	03 <sup>3</sup> 1 7 <sup>f</sup>	4313.57082	1032	06 <sup>6</sup> 0 7 <sup>e</sup>	4396.29290	1092	00 <sup>0</sup> 2 14 <sup>e</sup>	4479.12289	1152	06 <sup>6</sup> 0 13 <sup>e</sup>	4584.51139
973	11 <sup>1</sup> 0 14 <sup>f</sup>	4313.85725	1033	06 <sup>6</sup> 0 7 <sup>f</sup>	4396.29290	1093	01 <sup>1</sup> 0 50 <sup>f</sup>	4480.48717	1153	06 <sup>6</sup> 0 13 <sup>f</sup>	4584.51139
974	02 <sup>0</sup> 1 23 <sup>e</sup>	4314.55821	1034	03 <sup>1</sup> 1 11 <sup>f</sup>	4397.38021	1094	05 <sup>5</sup> 0 24 <sup>e</sup>	4481.57139	1154	03 <sup>3</sup> 1 15 <sup>e</sup>	4585.33360
975	01 <sup>1</sup> 0 49 <sup>e</sup>	4315.60501	1035	05 <sup>1</sup> 0 24 <sup>f</sup>	4397.89336	1095	05 <sup>5</sup> 0 24 <sup>f</sup>	4481.57195	1155	03 <sup>3</sup> 1 15 <sup>f</sup>	4585.34393
976	06 <sup>4</sup> 0 7 <sup>e</sup>	4319.95167	1036	04 <sup>2</sup> 0 32 <sup>e</sup>	4398.57851	1096	02 <sup>2</sup> 0 45 <sup>f</sup>	4487.56975	1156	10 <sup>0</sup> 0 29 <sup>e</sup>	4586.27998
977	06 <sup>4</sup> 0 7 <sup>f</sup>	4319.95167	1037	00 <sup>0</sup> 2 12 <sup>e</sup>	4400.44842	1097	04 <sup>2</sup> 0 33 <sup>f</sup>	4487.69326	1157	04 <sup>2</sup> 0 34 <sup>f</sup>	4588.51709
978	03 <sup>1</sup> 0 38 <sup>f</sup>	4320.95665	1038	02 <sup>2</sup> 1 24 <sup>f</sup>	4400.60410	1098	06 <sup>0</sup> 0 14 <sup>e</sup>	4488.91125	1158	06 <sup>4</sup> 0 15 <sup>f</sup>	4595.67352
979	06 <sup>2</sup> 0 9 <sup>f</sup>	4325.05822	1039	06 <sup>4</sup> 0 10 <sup>f</sup>	4400.87716	1099	00 <sup>0</sup> 1 40 <sup>e</sup>	4496.76922	1159	06 <sup>4</sup> 0 15 <sup>e</sup>	4595.67499
980	06 <sup>2</sup> 0 9 <sup>e</sup>	4325.25715	1040	06 <sup>4</sup> 0 10 <sup>e</sup>	4400.87722	1100	04 <sup>2</sup> 0 33 <sup>e</sup>	4497.28099	1160	06 <sup>2</sup> 0 16 <sup>f</sup>	4597.89023
981	05 <sup>1</sup> 0 23 <sup>f</sup>	4325.92276	1041	02 <sup>2</sup> 1 24 <sup>e</sup>	4401.89960	1101	02 <sup>2</sup> 0 45 <sup>e</sup>	4497.52773	1161	02 <sup>0</sup> 0 46 <sup>e</sup>	4598.90862
982	02 <sup>2</sup> 1 23 <sup>f</sup>	4329.98486	1042	11 <sup>1</sup> 0 16 <sup>e</sup>	4403.17840	1102	05 <sup>3</sup> 0 25 <sup>e</sup>	4497.59400	1162	04 <sup>2</sup> 0 34 <sup>e</sup>	4598.94034
983	02 <sup>2</sup> 1 23 <sup>e</sup>	4331.09385	1043	11 <sup>1</sup> 0 16 <sup>f</sup>	4405.24040	1103	05 <sup>3</sup> 0 25 <sup>f</sup>	4498.42166	1163	06 <sup>2</sup> 0 16 <sup>e</sup>	4599.59234
984	02 <sup>0</sup> 0 44 <sup>e</sup>	4332.02529	1044	06 <sup>0</sup> 0 12 <sup>e</sup>	4408.30771	1104	03 <sup>3</sup> 1 13 <sup>e</sup>	4499.68202	1164	03 <sup>1</sup> 1 16 <sup>e</sup>	4601.11360
985	00 <sup>0</sup> 2 10 <sup>e</sup>	4333.41599	1045	05 <sup>5</sup> 0 23 <sup>e</sup>	4410.02973	1105	03 <sup>3</sup> 1 13 <sup>f</sup>	4499.68647	1165	03 <sup>1</sup> 1 16 <sup>f</sup>	4605.25844
986	01 <sup>1</sup> 0 49 <sup>f</sup>	4333.43753	1046	05 <sup>5</sup> 0 23 <sup>f</sup>	4410.03010	1106	10 <sup>0</sup> 0 28 <sup>e</sup>	4501.42874	1166	01 <sup>1</sup> 0 51 <sup>e</sup>	4611.15731
987	03 <sup>1</sup> 1 9 <sup>e</sup>	4333.60006	1047	03 <sup>1</sup> 0 39 <sup>e</sup>	4415.34154	1107	06 <sup>2</sup> 0 14 <sup>f</sup>	4504.99846	1167	02 <sup>0</sup> 1 27 <sup>e</sup>	4613.84430
988	03 <sup>1</sup> 1 9 <sup>f</sup>	4334.97905	1048	10 <sup>0</sup> 0 27 <sup>e</sup>	4419.48505	1108	11 <sup>1</sup> 0 18 <sup>e</sup>	4505.79677	1168	05 <sup>1</sup> 0 27 <sup>e</sup>	4614.93284
989	03 <sup>3</sup> 1 8 <sup>e</sup>	4337.20687	1049	06 <sup>6</sup> 0 8 <sup>e</sup>	4420.19698	1109	06 <sup>2</sup> 0 14 <sup>e</sup>	4506.04657	1169	00 <sup>0</sup> 1 41 <sup>e</sup>	4616.35508
990	03 <sup>3</sup> 1 8 <sup>f</sup>	4337.20713	1050	06 <sup>6</sup> 0 8 <sup>f</sup>	4420.19698	1110	11 <sup>1</sup> 0 18 <sup>f</sup>	4508.38718	1170	00 <sup>0</sup> 2 17 <sup>e</sup>	4618.94656
991	06 <sup>0</sup> 0 10 <sup>e</sup>	4339.53376	1051	05 <sup>3</sup> 0 24 <sup>e</sup>	4422.89111	1111	06 <sup>4</sup> 0 13 <sup>f</sup>	4508.76863	1171	11 <sup>1</sup> 0 20 <sup>e</sup>	4620.10941
992	10 <sup>0</sup> 0 26 <sup>e</sup>	4340.45081	1052	05 <sup>3</sup> 0 24 <sup>f</sup>	4423.54837	1112	06 <sup>4</sup> 0 13 <sup>e</sup>	4508.76911	1172	02 <sup>2</sup> 0 46 <sup>f</sup>	4623.01626
993	04 <sup>4</sup> 0 31 <sup>f</sup>	4340.54074	1053	06 <sup>2</sup> 0 12 <sup>f</sup>	4424.04981	1113	06 <sup>6</sup> 0 11 <sup>e</sup>	4509.82867	1173	11 <sup>1</sup> 0 20 <sup>f</sup>	4623.28753
994	04 <sup>4</sup> 0 31 <sup>e</sup>	4340.62857	1054	06 <sup>2</sup> 0 12 <sup>e</sup>	4424.64066	1114	06 <sup>6</sup> 0 11 <sup>f</sup>	4509.82867	1174	06 <sup>6</sup> 0 14 <sup>e</sup>	4626.32961
995	05 <sup>5</sup> 0 22 <sup>e</sup>	4341.46120	1055	03 <sup>3</sup> 1 11 <sup>e</sup>	4425.83485	1115	03 <sup>1</sup> 1 14 <sup>e</sup>	4510.01491	1175	06 <sup>6</sup> 0 14 <sup>f</sup>	4626.32961
996	05 <sup>5</sup> 0 22 <sup>f</sup>	4341.46144	1056	03 <sup>3</sup> 1 11 <sup>f</sup>	4425.83651	1116	03 <sup>1</sup> 1 14 <sup>f</sup>	4513.22217	1176	02 <sup>2</sup> 1 27 <sup>f</sup>	4630.00770
997	06 <sup>4</sup> 0 8 <sup>f</sup>	4343.93021	1057	03 <sup>1</sup> 1 12 <sup>e</sup>	4430.64384	1117	00 <sup>0</sup> 2 15 <sup>e</sup>	4522.82357	1177	01 <sup>1</sup> 0 51 <sup>f</sup>	4630.41623
998	06 <sup>4</sup> 0 8 <sup>e</sup>	4343.93022	1058	03 <sup>1</sup> 1 12 <sup>f</sup>	4433.03028	1118	00 <sup>0</sup> 0 55 <sup>e</sup>	4525.40728	1178	05 <sup>1</sup> 0 27 <sup>f</sup>	4631.48667
999	03 <sup>3</sup> 0 38 <sup>e</sup>	4344.37082	1059	06 <sup>4</sup> 0 11 <sup>f</sup>	4433.84511	1119	03 <sup>1</sup> 0 40 <sup>e</sup>	4532.90577	1179	06 <sup>0</sup> 0 17 <sup>e</sup>	4631.90510
1000	03 <sup>3</sup> 0 38 <sup>f</sup>	4346.51536	1060	06 <sup>4</sup> 0 11 <sup>e</sup>	4433.84524	1120	06 <sup>0</sup> 0 15 <sup>e</sup>	4533.63540	1180	02 <sup>2</sup> 1 27 <sup>e</sup>	4631.99639
1001	05 <sup>3</sup> 0 23 <sup>e</sup>	4351.16415	1061	04 <sup>4</sup> 0 32 <sup>f</sup>	4435.69254	1121	04 <sup>4</sup> 0 33 <sup>f</sup>	4533.80148	1181	03 <sup>3</sup> 1 16 <sup>e</sup>	4632.58439
1002	05 <sup>3</sup> 0 23 <sup>f</sup>	4351.67994	1062	04 <sup>4</sup> 0 32 <sup>e</sup>	4435.80555	1122	04 <sup>4</sup> 0 33 <sup>e</sup>	4533.94569	1182	03 <sup>3</sup> 1 16 <sup>f</sup>	4632.59951
1003	01 <sup>1</sup> 1 32 <sup>e</sup>	4352.34692	1063	03 <sup>1</sup> 0 39 <sup>f</sup>	4436.47197	1123	02 <sup>0</sup> 1 26 <sup>e</sup>	4534.64232	1183	05 <sup>5</sup> 0 26 <sup>e</sup>	4633.57000
1004	02 <sup>2</sup> 0 44 <sup>f</sup>	4355.01847	1064	00 <sup>0</sup> 2 13 <sup>e</sup>	4438.33085	1124	05 <sup>1</sup> 0 26 <sup>e</sup>	4535.16880	1184	05 <sup>5</sup> 0 26 <sup>f</sup>	4633.57127
1005	06 <sup>2</sup> 0 10 <sup>f</sup>	4355.06198	1065	06 <sup>6</sup> 0 9 <sup>e</sup>	4447.08792	1125	03 <sup>3</sup> 1 14 <sup>e</sup>	4541.03257	1185	02 <sup>2</sup> 0 46 <sup>e</sup>	4633.60188
1006	06 <sup>2</sup> 0 10 <sup>e</sup>	4355.35883	1066	06 <sup>6</sup> 0 9 <sup>f</sup>	4447.08792	1126	03 <sup>3</sup> 1 14 <sup>f</sup>	4541.03945	1186	04 <sup>4</sup> 0 34 <sup>f</sup>	4634.86583
1007	11 <sup>1</sup> 0 15 <sup>e</sup>	4356.25765	1067	06 <sup>0</sup> 0 13 <sup>e</sup>	4447.13362	1127	06 <sup>0</sup> 0 12 <sup>e</sup>	4545.67755	1187	04 <sup>4</sup> 0 34 <sup>e</sup>	4635.04841
1008	11 <sup>1</sup> 0 15 <sup>f</sup>	4358.07778	1068	01 <sup>1</sup> 1 33 <sup>e</sup>	4448.80268	1128	06 <sup>6</sup> 0 12 <sup>f</sup>	4545.67755	1188	06 <sup>4</sup> 0 16 <sup>f</sup>	4643.61805
1009	01 <sup>1</sup> 1 32 <sup>f</sup>	4360.15027	1069	11 <sup>1</sup> 0 17 <sup>e</sup>	4453.02517	1129	01 <sup>1</sup> 1 34 <sup>e</sup>	4548.15467	1189	06 <sup>4</sup> 0 16 <sup>e</sup>	4643.62052
1010	03 <sup>1</sup> 1 10 <sup>e</sup>	4363.01133	1070	11 <sup>1</sup> 0 17 <sup>f</sup>	4455.34393	1130	06 <sup>2</sup> 0 15 <sup>f</sup>	4549.95266	1190	06 <sup>2</sup> 0 17 <sup>f</sup>	4648.80855
1011	03 <sup>3</sup> 1 9 <sup>e</sup>	4363.79654	1071	01 <sup>1</sup> 1 33 <sup>f</sup>	4457.08737	1131	02 <sup>2</sup> 1 26 <sup>f</sup>	4550.55402	1191	01 <sup>1</sup> 1 35 <sup>e</sup>	4650.40051
1012	03 <sup>3</sup> 1 9 <sup>f</sup>	4363.79705	1072	05 <sup>1</sup> 0 25 <sup>e</sup>	4458.21290	1132	06 <sup>4</sup> 0 14 <sup>f</sup>	4550.72358	1192	06 <sup>2</sup> 0 17 <sup>e</sup>	4650.91927
1013	02 <sup>2</sup> 0 44 <sup>e</sup>	4364.36619	1073	02 <sup>0</sup> 1 25 <sup>e</sup>	4458.46660	1133	06 <sup>4</sup> 0 14 <sup>e</sup>	4550.72443	1193	03 <sup>1</sup> 1 17 <sup>e</sup>	4651.05702
1014	03 <sup>1</sup> 1 10 <sup>f</sup>	4364.69603	1074	03 <sup>3</sup> 0 39 <sup>e</sup>	4459.90107	1134	05 <sup>1</sup> 0 26 <sup>f</sup>	4550.74500	1194	03 <sup>1</sup> 0 41 <sup>e</sup>	4653.36415
1015	00 <sup>0</sup> 0 54 <sup>e</sup>	4364.73032	1075	03 <sup>3</sup> 1 12 <sup>e</sup>	4461.28258	1135	06 <sup>2</sup> 0 15 <sup>e</sup>	4551.30144	1195	03 <sup>1</sup> 1 17 <sup>f</sup>	4655.71342
1016	00 <sup>0</sup> 2 11 <sup>e</sup>	4365.47652	1076	03 <sup>3</sup> 1 12 <sup>f</sup>	4461.28536	1136	02 <sup>2</sup> 1 26 <sup>e</sup>	4552.35220	1196	05 <sup>3</sup> 0 27 <sup>e</sup>	4655.91857
1017	04 <sup>0</sup> 0 32 <sup>e</sup>	4367.97561	1077	01 <sup>1</sup> 0 50 <sup>e</sup>	4461.94771	1137	03 <sup>1</sup> 1 15 <sup>e</sup>	4554.09904	1197	05 <sup>3</sup> 0 27 <sup>f</sup>	4657.18818
1018	06 <sup>4</sup> 0 9 <sup>f</sup>	4370.90544	1078	03 <sup>3</sup> 0 39 <sup>f</sup>	4462.35501	1138	03 <sup>1</sup> 0 40 <sup>f</sup>	4554.88276	1198	01 <sup>1</sup> 1 35 <sup>f</sup>	4659.68924
1019	06 <sup>4</sup> 0 9 <sup>e</sup>	4370.90547	1079	06 <sup>2</sup> 0 13 <sup>f</sup>	4463.03008	1139	05 <sup>5</sup> 0 25 <sup>e</sup>	4556.08516	1199	04 <sup>0</sup> 0 35 <sup>e</sup>	4668.57588
1020	06 <sup>0</sup> 0 11 <sup>e</sup>	4372.43913	1080	06 <sup>2</sup> 0 13 <sup>e</sup>	4463.82686	1140	05 <sup>5</sup> 0 25 <sup>f</sup>	4556.08602	1200	06 <sup>6</sup> 0 15 <sup>e</sup>	4671.13158

TABLE IX. The  $\text{H}^{12}\text{C}^{14}\text{N}$  rovibrational levels in  $\text{cm}^{-1}$ .

<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>
1201	06 <sup>6</sup> 0 15 <sup>f</sup>	4671.13158	1261	03 <sup>1</sup> 1 19 <sup>e</sup>	4759.72372	1321	07 <sup>1</sup> 0 1 <sup>e</sup>	4859.66869	1381	12 <sup>0</sup> 0 12 <sup>e</sup>	4914.37078
1202	00 <sup>0</sup> 2 18 <sup>e</sup>	4671.36657	1262	12 <sup>2</sup> 0 6 <sup>f</sup>	4761.15455	1322	07 <sup>1</sup> 0 1 <sup>f</sup>	4859.73430	1382	02 <sup>2</sup> 0 48 <sup>e</sup>	4914.47344
1203	10 <sup>0</sup> 0 30 <sup>e</sup>	4674.03676	1263	12 <sup>2</sup> 0 6 <sup>e</sup>	4761.16126	1323	12 <sup>2</sup> 0 10 <sup>f</sup>	4861.42478	1383	05 <sup>3</sup> 0 30 <sup>e</sup>	4915.66400
1204	03 <sup>1</sup> 0 41 <sup>f</sup>	4676.18542	1264	02 <sup>2</sup> 0 47 <sup>f</sup>	4761.35469	1324	12 <sup>2</sup> 0 10 <sup>e</sup>	4861.47225	1384	07 <sup>3</sup> 0 4 <sup>e</sup>	4917.68933
1205	11 <sup>1</sup> 0 21 <sup>e</sup>	4681.64772	1265	06 <sup>2</sup> 0 19 <sup>e</sup>	4762.67668	1325	01 <sup>1</sup> 1 37 <sup>e</sup>	4863.56383	1385	07 <sup>3</sup> 0 4 <sup>f</sup>	4917.68937
1206	03 <sup>3</sup> 1 17 <sup>e</sup>	4682.78418	1266	01 <sup>1</sup> 0 52 <sup>e</sup>	4763.23026	1326	06 <sup>0</sup> 0 21 <sup>e</sup>	4863.63618	1386	04 <sup>0</sup> 1 4 <sup>e</sup>	4917.69870
1207	03 <sup>3</sup> 1 17 <sup>f</sup>	4682.80580	1267	10 <sup>0</sup> 0 31 <sup>e</sup>	4764.69700	1327	00 <sup>0</sup> 1 43 <sup>e</sup>	4864.15275	1387	05 <sup>3</sup> 0 30 <sup>f</sup>	4917.90005
1208	12 <sup>0</sup> 0 0 <sup>e</sup>	4684.30997	1268	01 <sup>1</sup> 1 36 <sup>f</sup>	4765.34905	1328	06 <sup>4</sup> 0 20 <sup>f</sup>	4865.33296	1388	01 <sup>1</sup> 0 53 <sup>e</sup>	4918.16294
1209	11 <sup>1</sup> 0 21 <sup>f</sup>	4685.14183	1269	03 <sup>1</sup> 1 19 <sup>f</sup>	4765.48615	1329	06 <sup>4</sup> 0 20 <sup>e</sup>	4865.34750	1389	07 <sup>1</sup> 0 6 <sup>e</sup>	4919.26136
1210	06 <sup>0</sup> 0 18 <sup>e</sup>	4685.44310	1270	12 <sup>0</sup> 0 7 <sup>e</sup>	4766.93530	1330	07 <sup>1</sup> 0 2 <sup>e</sup>	4865.62956	1390	07 <sup>1</sup> 0 6 <sup>f</sup>	4920.63790
1211	12 <sup>0</sup> 0 1 <sup>e</sup>	4687.26164	1271	06 <sup>0</sup> 0 17 <sup>e</sup>	4769.68409	1331	07 <sup>1</sup> 0 2 <sup>f</sup>	4865.82639	1391	04 <sup>2</sup> 1 3 <sup>f</sup>	4920.72609
1212	00 <sup>0</sup> 0 56 <sup>e</sup>	4688.93396	1272	06 <sup>0</sup> 0 17 <sup>f</sup>	4769.68409	1332	02 <sup>0</sup> 1 30 <sup>e</sup>	4868.81498	1392	04 <sup>2</sup> 1 3 <sup>e</sup>	4920.72755
1213	04 <sup>2</sup> 0 35 <sup>f</sup>	4692.26467	1273	02 <sup>2</sup> 0 47 <sup>e</sup>	4772.58501	1333	05 <sup>1</sup> 0 30 <sup>e</sup>	4871.80219	1393	04 <sup>2</sup> 0 37 <sup>e</sup>	4921.60738
1214	12 <sup>0</sup> 0 2 <sup>e</sup>	4693.16480	1274	04 <sup>0</sup> 0 36 <sup>e</sup>	4774.58493	1334	01 <sup>1</sup> 1 37 <sup>f</sup>	4873.91135	1394	01 <sup>1</sup> 2 5 <sup>e</sup>	4922.01991
1215	06 <sup>4</sup> 0 17 <sup>f</sup>	4694.55676	1275	03 <sup>1</sup> 0 42 <sup>e</sup>	4776.71371	1335	07 <sup>1</sup> 0 3 <sup>e</sup>	4874.57020	1395	01 <sup>1</sup> 2 5 <sup>f</sup>	4922.24394
1216	06 <sup>4</sup> 0 17 <sup>e</sup>	4694.56077	1276	02 <sup>0</sup> 1 29 <sup>e</sup>	4780.92710	1336	07 <sup>1</sup> 0 3 <sup>f</sup>	4874.96382	1396	03 <sup>1</sup> 0 43 <sup>f</sup>	4927.45272
1217	02 <sup>0</sup> 1 28 <sup>e</sup>	4695.93776	1277	12 <sup>2</sup> 0 7 <sup>f</sup>	4781.80070	1337	02 <sup>0</sup> 0 48 <sup>e</sup>	4877.29481	1397	06 <sup>4</sup> 0 21 <sup>f</sup>	4928.24311
1218	05 <sup>1</sup> 0 28 <sup>e</sup>	4697.63149	1278	12 <sup>2</sup> 0 7 <sup>e</sup>	4781.81279	1338	12 <sup>0</sup> 0 11 <sup>e</sup>	4878.99903	1398	06 <sup>4</sup> 0 21 <sup>e</sup>	4928.26453
1219	03 <sup>3</sup> 0 41 <sup>e</sup>	4699.74452	1279	01 <sup>1</sup> 0 52 <sup>f</sup>	4783.22106	1339	03 <sup>1</sup> 1 21 <sup>e</sup>	4880.08503	1399	06 <sup>0</sup> 0 22 <sup>e</sup>	4928.88686
1220	12 <sup>0</sup> 0 3 <sup>e</sup>	4702.01912	1280	05 <sup>1</sup> 0 29 <sup>e</sup>	4783.25649	1340	06 <sup>6</sup> 0 19 <sup>f</sup>	4880.16308	1400	12 <sup>2</sup> 0 12 <sup>f</sup>	4929.23884
1221	06 <sup>2</sup> 0 18 <sup>f</sup>	4702.70487	1281	00 <sup>0</sup> 2 20 <sup>e</sup>	4784.91728	1341	06 <sup>6</sup> 0 19 <sup>e</sup>	4880.16309	1401	12 <sup>2</sup> 0 12 <sup>e</sup>	4929.33463
1222	03 <sup>3</sup> 0 41 <sup>f</sup>	4702.90463	1282	12 <sup>0</sup> 0 8 <sup>e</sup>	4790.53441	1342	01 <sup>1</sup> 2 1 <sup>e</sup>	4881.21005	1402	04 <sup>0</sup> 1 5 <sup>e</sup>	4932.52380
1223	04 <sup>2</sup> 0 35 <sup>e</sup>	4703.55144	1283	03 <sup>3</sup> 1 19 <sup>e</sup>	4792.02731	1343	01 <sup>1</sup> 2 1 <sup>f</sup>	4881.22499	1403	04 <sup>2</sup> 1 4 <sup>f</sup>	4932.58447
1224	03 <sup>1</sup> 1 18 <sup>e</sup>	4703.92763	1284	03 <sup>3</sup> 1 19 <sup>f</sup>	4792.06896	1344	06 <sup>2</sup> 0 21 <sup>f</sup>	4882.23224	1404	04 <sup>2</sup> 1 4 <sup>e</sup>	4932.58884
1225	06 <sup>2</sup> 0 18 <sup>e</sup>	4705.28131	1285	05 <sup>5</sup> 0 28 <sup>e</sup>	4797.44851	1345	04 <sup>0</sup> 0 37 <sup>e</sup>	4883.49477	1405	07 <sup>3</sup> 0 5 <sup>e</sup>	4932.73831
1226	12 <sup>2</sup> 0 2 <sup>f</sup>	4708.05901	1286	05 <sup>5</sup> 0 28 <sup>f</sup>	4797.45120	1346	11 <sup>1</sup> 0 24 <sup>e</sup>	4883.77285	1406	07 <sup>3</sup> 0 5 <sup>f</sup>	4932.73848
1227	12 <sup>2</sup> 0 2 <sup>e</sup>	4708.05911	1287	02 <sup>2</sup> 1 29 <sup>f</sup>	4797.56554	1347	05 <sup>5</sup> 0 29 <sup>e</sup>	4883.83989	1407	01 <sup>1</sup> 0 53 <sup>f</sup>	4938.89797
1228	03 <sup>1</sup> 1 18 <sup>f</sup>	4709.12343	1288	04 <sup>2</sup> 0 36 <sup>f</sup>	4798.93265	1348	05 <sup>5</sup> 0 29 <sup>f</sup>	4883.84373	1408	01 <sup>1</sup> 2 6 <sup>e</sup>	4939.50844
1229	02 <sup>2</sup> 1 28 <sup>f</sup>	4712.32747	1289	02 <sup>2</sup> 1 29 <sup>e</sup>	4800.11240	1349	02 <sup>2</sup> 1 30 <sup>f</sup>	4885.72098	1409	01 <sup>1</sup> 2 6 <sup>f</sup>	4939.82203
1230	12 <sup>0</sup> 0 4 <sup>e</sup>	4713.82409	1290	03 <sup>1</sup> 0 42 <sup>f</sup>	4800.37650	1350	07 <sup>1</sup> 0 4 <sup>e</sup>	4886.48979	1410	06 <sup>6</sup> 0 20 <sup>e</sup>	4939.87301
1231	05 <sup>5</sup> 0 27 <sup>e</sup>	4714.02483	1291	06 <sup>0</sup> 0 20 <sup>e</sup>	4801.31083	1351	06 <sup>2</sup> 0 21 <sup>e</sup>	4886.55620	1411	06 <sup>6</sup> 0 20 <sup>f</sup>	4939.87301
1232	05 <sup>5</sup> 0 27 <sup>f</sup>	4714.02669	1292	05 <sup>1</sup> 0 29 <sup>f</sup>	4801.86942	1352	01 <sup>1</sup> 2 2 <sup>e</sup>	4887.04032	1412	07 <sup>1</sup> 0 7 <sup>e</sup>	4940.11049
1233	02 <sup>2</sup> 1 28 <sup>e</sup>	4714.58372	1293	12 <sup>2</sup> 0 8 <sup>f</sup>	4805.39485	1353	03 <sup>1</sup> 1 21 <sup>f</sup>	4887.05943	1413	07 <sup>1</sup> 0 7 <sup>f</sup>	4941.94488
1234	05 <sup>1</sup> 0 28 <sup>f</sup>	4715.21471	1294	06 <sup>4</sup> 0 19 <sup>f</sup>	4805.41477	1354	01 <sup>1</sup> 2 2 <sup>f</sup>	4887.08513	1414	03 <sup>1</sup> 1 22 <sup>e</sup>	4944.64647
1235	12 <sup>2</sup> 0 3 <sup>f</sup>	4716.90881	1295	12 <sup>2</sup> 0 8 <sup>e</sup>	4805.41500	1355	07 <sup>1</sup> 0 4 <sup>f</sup>	4887.14571	1415	04 <sup>2</sup> 1 5 <sup>f</sup>	4947.40663
1236	12 <sup>2</sup> 0 3 <sup>e</sup>	4716.90929	1296	06 <sup>4</sup> 0 19 <sup>e</sup>	4805.42445	1356	04 <sup>0</sup> 1 0 <sup>e</sup>	4888.03928	1416	04 <sup>2</sup> 1 5 <sup>e</sup>	4947.41684
1237	06 <sup>6</sup> 0 16 <sup>e</sup>	4718.91665	1297	04 <sup>2</sup> 0 36 <sup>e</sup>	4811.10895	1357	11 <sup>1</sup> 0 24 <sup>f</sup>	4888.30292	1417	06 <sup>2</sup> 0 22 <sup>f</sup>	4948.01030
1238	06 <sup>6</sup> 0 16 <sup>f</sup>	4718.91665	1298	11 <sup>1</sup> 0 23 <sup>e</sup>	4813.48101	1358	02 <sup>2</sup> 1 30 <sup>e</sup>	4888.58044	1418	04 <sup>0</sup> 1 6 <sup>e</sup>	4950.30985
1239	00 <sup>0</sup> 2 19 <sup>e</sup>	4726.69058	1299	12 <sup>0</sup> 0 9 <sup>e</sup>	4817.07910	1359	04 <sup>0</sup> 1 1 <sup>e</sup>	4891.00577	1419	07 <sup>3</sup> 0 6 <sup>e</sup>	4950.79738
1240	12 <sup>0</sup> 0 5 <sup>e</sup>	4728.57904	1300	11 <sup>1</sup> 0 23 <sup>f</sup>	4817.65114	1360	05 <sup>1</sup> 0 30 <sup>f</sup>	4891.44330	1420	07 <sup>3</sup> 0 6 <sup>f</sup>	4950.79790
1241	12 <sup>2</sup> 0 4 <sup>f</sup>	4728.70820	1301	03 <sup>1</sup> 1 20 <sup>e</sup>	4818.44347	1361	12 <sup>2</sup> 0 11 <sup>f</sup>	4893.85918	1421	03 <sup>3</sup> 0 43 <sup>e</sup>	4951.27876
1242	12 <sup>2</sup> 0 4 <sup>e</sup>	4728.70964	1302	06 <sup>2</sup> 0 20 <sup>f</sup>	4819.41982	1362	12 <sup>2</sup> 0 11 <sup>e</sup>	4893.92769	1422	03 <sup>1</sup> 1 22 <sup>f</sup>	4952.26446
1243	03 <sup>3</sup> 1 18 <sup>e</sup>	4735.93213	1303	06 <sup>2</sup> 0 20 <sup>e</sup>	4823.10276	1363	01 <sup>1</sup> 2 3 <sup>e</sup>	4895.78553	1423	12 <sup>0</sup> 0 13 <sup>e</sup>	4952.68114
1244	03 <sup>3</sup> 1 18 <sup>f</sup>	4735.96241	1304	06 <sup>6</sup> 0 18 <sup>e</sup>	4823.43317	1364	01 <sup>1</sup> 2 3 <sup>f</sup>	4895.87516	1424	06 <sup>2</sup> 0 22 <sup>e</sup>	4953.03299
1245	02 <sup>0</sup> 0 47 <sup>e</sup>	4736.66538	1305	06 <sup>6</sup> 0 18 <sup>f</sup>	4823.43317	1365	04 <sup>0</sup> 1 2 <sup>e</sup>	4896.93840	1425	10 <sup>0</sup> 0 33 <sup>e</sup>	4954.71931
1246	00 <sup>0</sup> 1 42 <sup>e</sup>	4738.81722	1306	03 <sup>3</sup> 0 42 <sup>e</sup>	4824.05182	1366	07 <sup>1</sup> 0 5 <sup>e</sup>	4901.38728	1426	03 <sup>3</sup> 0 43 <sup>f</sup>	4955.26404
1247	04 <sup>4</sup> 0 35 <sup>f</sup>	4738.88378	1307	03 <sup>1</sup> 1 20 <sup>f</sup>	4824.79904	1367	07 <sup>1</sup> 0 5 <sup>f</sup>	4902.37090	1427	04 <sup>4</sup> 0 37 <sup>f</sup>	4955.77274
1248	04 <sup>4</sup> 0 35 <sup>e</sup>	4739.11322	1308	05 <sup>3</sup> 0 29 <sup>e</sup>	4826.11806	1368	02 <sup>2</sup> 0 48 <sup>f</sup>	4902.58166	1428	04 <sup>4</sup> 0 37 <sup>e</sup>	4956.12738
1249	05 <sup>3</sup> 0 28 <sup>e</sup>	4739.53529	1309	03 <sup>3</sup> 0 42 <sup>f</sup>	4827.60956	1369	03 <sup>1</sup> 0 43 <sup>e</sup>	4902.95143	1429	11 <sup>1</sup> 0 25 <sup>e</sup>	4956.97929
1250	05 <sup>3</sup> 0 28 <sup>f</sup>	4741.08343	1310	05 <sup>3</sup> 0 29 <sup>f</sup>	4827.98741	1370	07 <sup>3</sup> 0 3 <sup>f</sup>	4905.65033	1430	02 <sup>0</sup> 1 31 <sup>e</sup>	4959.59643
1251	06 <sup>0</sup> 0 19 <sup>e</sup>	4741.91248	1311	12 <sup>2</sup> 0 9 <sup>f</sup>	4831.93643	1371	07 <sup>3</sup> 0 3 <sup>e</sup>	4905.65033	1431	01 <sup>1</sup> 2 7 <sup>e</sup>	4959.91064
1252	12 <sup>2</sup> 0 5 <sup>f</sup>	4743.45690	1312	12 <sup>2</sup> 0 9 <sup>e</sup>	4831.96809	1372	04 <sup>0</sup> 1 3 <sup>e</sup>	4905.83641	1432	01 <sup>1</sup> 2 7 <sup>f</sup>	4960.32870
1253	12 <sup>2</sup> 0 5 <sup>e</sup>	4743.46026	1313	04 <sup>4</sup> 0 36 <sup>f</sup>	4845.85342	1373	01 <sup>1</sup> 2 4 <sup>e</sup>	4907.44549	1433	11 <sup>1</sup> 0 25 <sup>f</sup>	4961.88384
1254	11 <sup>1</sup> 0 22 <sup>e</sup>	4746.10543	1314	00 <sup>0</sup> 2 21 <sup>e</sup>	4846.04526	1374	01 <sup>1</sup> 2 4 <sup>f</sup>	4907.59486	1434	05 <sup>1</sup> 0 31 <sup>e</sup>	4963.26658
1255	12 <sup>0</sup> 0 6 <sup>e</sup>	4746.28311	1315	04 <sup>4</sup> 0 36 <sup>e</sup>	4846.13967	1375	04 <sup>2</sup> 0 37 <sup>f</sup>	4908.51765	1435	07 <sup>1</sup> 0 8 <sup>e</sup>	4963.93293
1256	06 <sup>4</sup> 0 18 <sup>f</sup>	4748.48918	1316	12 <sup>0</sup> 0 10 <sup>e</sup>	4846.56787	1376	00 <sup>2</sup> 2 22 <sup>e</sup>	4910.07306	1436	04 <sup>2</sup> 1 6 <sup>f</sup>	4965.19202
1257	06 <sup>4</sup> 0 18 <sup>e</sup>	4748.49548	1317	03 <sup>3</sup> 1 20 <sup>e</sup>	4851.06876	1377	04 <sup>2</sup> 1 2 <sup>f</sup>	4911.83192	1437	04 <sup>2</sup> 1 6 <sup>e</sup>	4965.21243
1258	11 <sup>1</sup> 0 22 <sup>f</sup>	4749.93023	1318	03 <sup>3</sup> 1 20 <sup>f</sup>	4851.12511	1378	04 <sup>2</sup> 1 2 <sup>e</sup>	4911.83222	1438	07 <sup>1</sup> 0 8 <sup>f</sup>	4966.28968
1259	01 <sup>1</sup> 1 36 <sup>e</sup>	4755.53773	1319	00 <sup>0</sup> 0 57 <sup>e</sup>	4855.30651	1379	03 <sup>3</sup> 1 21 <sup>e</sup>	4913.05539	1439	12 <sup>2</sup> 0 13 <sup>f</sup>	4967.56287
1260	06 <sup>2</sup> 0 19 <sup>f</sup>	4759.57631	1320	10 <sup>0</sup> 0 32 <sup>e</sup>	4858.25859	1380	03 <sup>3</sup> 1 21 <sup>f</sup>	4913.13052	1440	12 <sup>2</sup> 0 13 <sup>e</sup>	4967.69329



TABLE X. The H<sup>12</sup>C<sup>14</sup>N rovibrational levels in cm<sup>-1</sup>.

<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>
1441	04 <sup>0</sup> 1 7 <sup>e</sup>	4971.05466	1501	04 <sup>4</sup> 1 7 <sup>f</sup>	5030.46628	1561	07 <sup>3</sup> 0 11 <sup>f</sup>	5086.26536	1621	05 <sup>5</sup> 0 32 <sup>e</sup>	5160.80795
1442	07 <sup>3</sup> 0 7 <sup>e</sup>	4971.86666	1502	04 <sup>4</sup> 1 7 <sup>e</sup>	5030.46629	1562	01 <sup>1</sup> 1 39 <sup>e</sup>	5088.27221	1622	05 <sup>5</sup> 0 32 <sup>f</sup>	5160.81833
1443	07 <sup>3</sup> 0 7 <sup>f</sup>	4971.86796	1503	03 <sup>1</sup> 0 44 <sup>e</sup>	5032.07426	1563	06 <sup>2</sup> 0 24 <sup>f</sup>	5088.44911	1623	07 <sup>3</sup> 0 13 <sup>e</sup>	5161.49719
1444	05 <sup>5</sup> 0 30 <sup>e</sup>	4973.19776	1504	11 <sup>1</sup> 0 26 <sup>e</sup>	5033.09859	1564	07 <sup>1</sup> 0 12 <sup>e</sup>	5088.91449	1624	07 <sup>3</sup> 0 13 <sup>f</sup>	5161.54664
1445	05 <sup>5</sup> 0 30 <sup>f</sup>	4973.20317	1505	07 <sup>5</sup> 0 7 <sup>f</sup>	5033.36510	1565	03 <sup>1</sup> 1 24 <sup>f</sup>	5091.49749	1625	06 <sup>2</sup> 0 25 <sup>f</sup>	5163.10240
1446	01 <sup>1</sup> 1 38 <sup>e</sup>	4974.47621	1506	07 <sup>5</sup> 0 7 <sup>e</sup>	5033.36510	1566	07 <sup>1</sup> 0 12 <sup>f</sup>	5093.98959	1626	03 <sup>1</sup> 0 45 <sup>e</sup>	5164.07906
1447	02 <sup>2</sup> 1 31 <sup>f</sup>	4976.79177	1507	04 <sup>2</sup> 0 38 <sup>e</sup>	5035.04101	1567	06 <sup>2</sup> 0 24 <sup>e</sup>	5095.03781	1627	03 <sup>1</sup> 1 25 <sup>f</sup>	5165.51811
1448	00 <sup>0</sup> 2 23 <sup>e</sup>	4976.99913	1508	04 <sup>2</sup> 1 9 <sup>f</sup>	5036.32054	1568	01 <sup>1</sup> 0 54 <sup>f</sup>	5097.44319	1628	02 <sup>0</sup> 0 50 <sup>e</sup>	5167.15888
1449	04 <sup>4</sup> 1 4 <sup>e</sup>	4977.19604	1509	04 <sup>2</sup> 1 9 <sup>e</sup>	5036.41646	1569	04 <sup>2</sup> 1 11 <sup>f</sup>	5098.54084	1629	02 <sup>2</sup> 1 33 <sup>f</sup>	5167.67096
1450	04 <sup>4</sup> 1 4 <sup>f</sup>	4977.19604	1510	12 <sup>0</sup> 0 15 <sup>e</sup>	5038.10920	1570	04 <sup>2</sup> 1 11 <sup>e</sup>	5098.74750	1630	07 <sup>1</sup> 0 14 <sup>e</sup>	5169.18744
1451	03 <sup>3</sup> 1 22 <sup>e</sup>	4977.98607	1511	11 <sup>1</sup> 0 26 <sup>f</sup>	5038.39210	1571	01 <sup>1</sup> 1 39 <sup>f</sup>	5099.73269	1631	06 <sup>2</sup> 0 25 <sup>e</sup>	5170.55520
1452	03 <sup>3</sup> 1 22 <sup>f</sup>	4978.08486	1512	01 <sup>1</sup> 2 10 <sup>e</sup>	5038.59406	1572	12 <sup>2</sup> 0 16 <sup>f</sup>	5100.19154	1632	02 <sup>2</sup> 1 33 <sup>e</sup>	5171.59841
1453	02 <sup>2</sup> 1 31 <sup>e</sup>	4979.98568	1513	01 <sup>1</sup> 2 10 <sup>f</sup>	5039.41473	1573	12 <sup>2</sup> 0 16 <sup>e</sup>	5100.48153	1633	04 <sup>2</sup> 1 13 <sup>f</sup>	5172.59175
1454	01 <sup>1</sup> 2 8 <sup>e</sup>	4983.22604	1514	03 <sup>3</sup> 1 23 <sup>e</sup>	5045.85956	1574	05 <sup>3</sup> 0 32 <sup>e</sup>	5103.63299	1634	04 <sup>2</sup> 1 13 <sup>e</sup>	5172.98239
1455	01 <sup>1</sup> 2 8 <sup>f</sup>	4983.76344	1515	03 <sup>3</sup> 1 23 <sup>f</sup>	5045.98786	1575	01 <sup>1</sup> 2 12 <sup>e</sup>	5105.60714	1635	07 <sup>1</sup> 0 14 <sup>f</sup>	5175.97911
1456	05 <sup>1</sup> 0 31 <sup>f</sup>	4983.93068	1516	02 <sup>2</sup> 0 49 <sup>f</sup>	5046.69375	1576	05 <sup>3</sup> 0 32 <sup>f</sup>	5106.74786	1636	07 <sup>7</sup> 0 9 <sup>f</sup>	5176.23062
1457	01 <sup>1</sup> 1 38 <sup>f</sup>	4985.37347	1517	00 <sup>0</sup> 2 24 <sup>e</sup>	5046.82187	1577	01 <sup>1</sup> 2 12 <sup>f</sup>	5106.77038	1637	07 <sup>7</sup> 0 9 <sup>e</sup>	5176.23062
1458	04 <sup>2</sup> 1 7 <sup>f</sup>	4985.94000	1518	04 <sup>0</sup> 1 10 <sup>e</sup>	5051.01456	1578	04 <sup>0</sup> 0 39 <sup>e</sup>	5110.00731	1638	05 <sup>1</sup> 0 33 <sup>f</sup>	5177.62856
1459	04 <sup>2</sup> 1 7 <sup>e</sup>	4985.97672	1519	12 <sup>2</sup> 0 15 <sup>f</sup>	5053.04027	1579	04 <sup>4</sup> 1 10 <sup>f</sup>	5110.36309	1639	04 <sup>4</sup> 1 12 <sup>f</sup>	5178.41525
1460	07 <sup>1</sup> 0 9 <sup>e</sup>	4990.72674	1520	07 <sup>3</sup> 0 10 <sup>e</sup>	5053.13637	1580	04 <sup>4</sup> 1 10 <sup>e</sup>	5110.36310	1640	04 <sup>4</sup> 1 12 <sup>e</sup>	5178.41530
1461	04 <sup>4</sup> 1 5 <sup>e</sup>	4991.99379	1521	07 <sup>3</sup> 0 10 <sup>f</sup>	5053.14699	1581	11 <sup>1</sup> 0 27 <sup>e</sup>	5112.12894	1641	07 <sup>5</sup> 0 12 <sup>e</sup>	5183.44359
1462	04 <sup>4</sup> 1 5 <sup>f</sup>	4991.99379	1522	07 <sup>1</sup> 0 11 <sup>e</sup>	5053.21985	1582	07 <sup>5</sup> 0 10 <sup>f</sup>	5114.41071	1642	07 <sup>5</sup> 0 12 <sup>f</sup>	5183.44360
1463	00 <sup>0</sup> 1 44 <sup>e</sup>	4992.35866	1523	12 <sup>2</sup> 0 15 <sup>e</sup>	5053.26659	1583	07 <sup>5</sup> 0 10 <sup>e</sup>	5114.41071	1643	01 <sup>1</sup> 2 14 <sup>e</sup>	5184.25876
1464	07 <sup>1</sup> 0 9 <sup>f</sup>	4993.66974	1524	02 <sup>0</sup> 1 32 <sup>e</sup>	5053.27123	1584	03 <sup>3</sup> 1 24 <sup>e</sup>	5116.67456	1644	04 <sup>4</sup> 0 39 <sup>f</sup>	5184.45181
1465	12 <sup>0</sup> 0 14 <sup>e</sup>	4993.92802	1525	10 <sup>0</sup> 0 34 <sup>e</sup>	5054.07690	1585	03 <sup>3</sup> 1 24 <sup>f</sup>	5116.83925	1645	04 <sup>4</sup> 0 39 <sup>e</sup>	5184.98538
1466	06 <sup>4</sup> 0 22 <sup>f</sup>	4994.14451	1526	04 <sup>4</sup> 1 8 <sup>e</sup>	5054.14048	1586	11 <sup>1</sup> 0 27 <sup>f</sup>	5117.82586	1646	01 <sup>1</sup> 2 14 <sup>f</sup>	5185.82369
1467	06 <sup>4</sup> 0 22 <sup>e</sup>	4994.17549	1527	04 <sup>4</sup> 1 8 <sup>f</sup>	5054.14048	1587	04 <sup>0</sup> 1 12 <sup>e</sup>	5119.06009	1647	12 <sup>0</sup> 0 18 <sup>e</sup>	5188.23491
1468	07 <sup>5</sup> 0 5 <sup>f</sup>	4994.34043	1528	07 <sup>5</sup> 0 8 <sup>e</sup>	5057.37940	1588	00 <sup>0</sup> 2 25 <sup>e</sup>	5119.53960	1648	03 <sup>1</sup> 0 45 <sup>f</sup>	5190.24802
1469	07 <sup>5</sup> 0 5 <sup>e</sup>	4994.34043	1529	07 <sup>5</sup> 0 8 <sup>f</sup>	5057.37941	1589	07 <sup>3</sup> 0 12 <sup>e</sup>	5122.36718	1649	03 <sup>3</sup> 1 25 <sup>e</sup>	5190.42966
1470	04 <sup>0</sup> 1 8 <sup>e</sup>	4994.75569	1530	03 <sup>1</sup> 0 44 <sup>f</sup>	5057.41090	1590	07 <sup>3</sup> 0 12 <sup>f</sup>	5122.39812	1650	03 <sup>3</sup> 1 25 <sup>f</sup>	5190.63879
1471	04 <sup>0</sup> 0 38 <sup>e</sup>	4995.30305	1531	07 <sup>1</sup> 0 11 <sup>f</sup>	5057.52333	1591	00 <sup>0</sup> 1 45 <sup>e</sup>	5123.43193	1651	02 <sup>2</sup> 0 50 <sup>f</sup>	5193.68742
1472	07 <sup>3</sup> 0 8 <sup>e</sup>	4995.94624	1532	05 <sup>1</sup> 0 32 <sup>e</sup>	5057.64618	1592	07 <sup>7</sup> 0 7 <sup>f</sup>	5125.39398	1652	11 <sup>1</sup> 0 28 <sup>e</sup>	5194.06846
1473	07 <sup>3</sup> 0 8 <sup>f</sup>	4995.94910	1533	02 <sup>2</sup> 0 49 <sup>e</sup>	5059.26340	1593	07 <sup>7</sup> 0 7 <sup>e</sup>	5125.39398	1653	00 <sup>0</sup> 2 26 <sup>e</sup>	5195.15057
1474	06 <sup>0</sup> 0 23 <sup>e</sup>	4997.06141	1534	06 <sup>4</sup> 0 23 <sup>f</sup>	5063.03635	1594	07 <sup>1</sup> 0 13 <sup>e</sup>	5127.57121	1654	00 <sup>0</sup> 0 59 <sup>e</sup>	5196.57347
1475	06 <sup>0</sup> 0 21 <sup>e</sup>	5002.56208	1535	06 <sup>4</sup> 0 23 <sup>e</sup>	5063.08041	1595	07 <sup>1</sup> 0 13 <sup>f</sup>	5133.47649	1655	04 <sup>0</sup> 1 14 <sup>e</sup>	5198.86258
1476	06 <sup>0</sup> 0 21 <sup>f</sup>	5002.56208	1536	05 <sup>5</sup> 0 31 <sup>e</sup>	5065.52088	1596	04 <sup>2</sup> 1 12 <sup>f</sup>	5134.08811	1656	11 <sup>1</sup> 0 28 <sup>f</sup>	5200.18315
1477	05 <sup>3</sup> 0 31 <sup>e</sup>	5008.17004	1537	05 <sup>5</sup> 0 31 <sup>f</sup>	5065.52841	1597	04 <sup>2</sup> 1 12 <sup>e</sup>	5134.37618	1657	05 <sup>3</sup> 0 33 <sup>e</sup>	5202.04949
1478	12 <sup>2</sup> 0 14 <sup>f</sup>	5008.83036	1538	04 <sup>2</sup> 1 10 <sup>f</sup>	5065.95125	1598	06 <sup>4</sup> 0 24 <sup>f</sup>	5134.91775	1658	12 <sup>2</sup> 0 18 <sup>f</sup>	5203.31342
1479	12 <sup>2</sup> 0 14 <sup>e</sup>	5009.00389	1539	04 <sup>2</sup> 1 10 <sup>e</sup>	5066.09479	1599	06 <sup>4</sup> 0 24 <sup>e</sup>	5134.97946	1659	07 <sup>3</sup> 0 14 <sup>e</sup>	5203.63630
1480	01 <sup>1</sup> 2 9 <sup>e</sup>	5009.45406	1540	06 <sup>0</sup> 0 24 <sup>e</sup>	5068.15737	1600	12 <sup>0</sup> 0 17 <sup>e</sup>	5135.26509	1660	07 <sup>3</sup> 0 14 <sup>f</sup>	5203.71257
1481	04 <sup>2</sup> 1 8 <sup>f</sup>	5009.64979	1541	06 <sup>0</sup> 0 22 <sup>f</sup>	5068.22937	1601	04 <sup>2</sup> 0 39 <sup>f</sup>	5136.42503	1661	12 <sup>2</sup> 0 18 <sup>e</sup>	5203.76843
1482	04 <sup>2</sup> 1 8 <sup>e</sup>	5009.71093	1542	06 <sup>0</sup> 0 22 <sup>e</sup>	5068.22938	1602	06 <sup>0</sup> 0 23 <sup>f</sup>	5136.87395	1662	01 <sup>1</sup> 1 40 <sup>e</sup>	5204.94910
1483	04 <sup>4</sup> 1 6 <sup>e</sup>	5009.75062	1543	04 <sup>4</sup> 0 38 <sup>f</sup>	5068.63962	1603	06 <sup>0</sup> 0 23 <sup>e</sup>	5136.87396	1663	05 <sup>3</sup> 0 33 <sup>f</sup>	5205.67963
1484	04 <sup>4</sup> 1 6 <sup>f</sup>	5009.75062	1544	04 <sup>4</sup> 0 38 <sup>e</sup>	5069.07604	1604	06 <sup>0</sup> 0 25 <sup>e</sup>	5142.17503	1664	07 <sup>7</sup> 0 10 <sup>f</sup>	5206.13248
1485	01 <sup>1</sup> 2 9 <sup>f</sup>	5010.12567	1545	01 <sup>1</sup> 2 11 <sup>e</sup>	5070.64535	1605	04 <sup>4</sup> 1 11 <sup>f</sup>	5142.91070	1665	07 <sup>7</sup> 0 10 <sup>e</sup>	5206.13248
1486	05 <sup>3</sup> 0 31 <sup>f</sup>	5010.82064	1546	02 <sup>2</sup> 1 32 <sup>f</sup>	5070.77571	1606	04 <sup>4</sup> 1 11 <sup>e</sup>	5142.91073	1666	02 <sup>2</sup> 0 50 <sup>e</sup>	5206.95110
1487	03 <sup>1</sup> 1 23 <sup>e</sup>	5012.12578	1547	01 <sup>1</sup> 2 11 <sup>f</sup>	5071.62990	1607	01 <sup>1</sup> 2 13 <sup>e</sup>	5143.47858	1667	06 <sup>0</sup> 0 24 <sup>f</sup>	5208.49482
1488	07 <sup>5</sup> 0 6 <sup>f</sup>	5012.35204	1548	02 <sup>2</sup> 1 32 <sup>e</sup>	5074.32582	1608	01 <sup>1</sup> 2 13 <sup>f</sup>	5144.83529	1668	06 <sup>0</sup> 0 24 <sup>e</sup>	5208.49484
1489	07 <sup>5</sup> 0 6 <sup>e</sup>	5012.35204	1549	01 <sup>1</sup> 0 54 <sup>e</sup>	5075.95167	1609	07 <sup>5</sup> 0 11 <sup>f</sup>	5147.42712	1669	06 <sup>4</sup> 0 25 <sup>f</sup>	5209.78770
1490	06 <sup>2</sup> 0 23 <sup>f</sup>	5016.75015	1550	05 <sup>1</sup> 0 32 <sup>f</sup>	5079.32732	1610	07 <sup>5</sup> 0 11 <sup>e</sup>	5147.42712	1670	06 <sup>4</sup> 0 25 <sup>e</sup>	5209.87290
1491	03 <sup>1</sup> 1 23 <sup>f</sup>	5020.41139	1551	04 <sup>4</sup> 1 9 <sup>e</sup>	5080.77288	1611	07 <sup>7</sup> 0 8 <sup>f</sup>	5149.31765	1671	07 <sup>1</sup> 0 15 <sup>e</sup>	5213.76052
1492	07 <sup>1</sup> 0 10 <sup>e</sup>	5020.48981	1552	04 <sup>4</sup> 1 9 <sup>f</sup>	5080.77288	1612	07 <sup>7</sup> 0 8 <sup>e</sup>	5149.31765	1672	04 <sup>2</sup> 1 14 <sup>f</sup>	5214.05035
1493	02 <sup>0</sup> 0 49 <sup>e</sup>	5020.79372	1553	03 <sup>3</sup> 0 44 <sup>e</sup>	5081.42217	1613	02 <sup>0</sup> 1 33 <sup>e</sup>	5149.83710	1673	03 <sup>3</sup> 0 45 <sup>e</sup>	5214.47880
1494	04 <sup>2</sup> 0 38 <sup>f</sup>	5021.01626	1554	03 <sup>1</sup> 1 24 <sup>e</sup>	5082.52121	1614	12 <sup>2</sup> 0 17 <sup>f</sup>	5150.28300	1674	04 <sup>2</sup> 1 14 <sup>e</sup>	5214.56758
1495	04 <sup>0</sup> 1 9 <sup>e</sup>	5021.41004	1555	04 <sup>0</sup> 1 11 <sup>e</sup>	5083.56579	1615	12 <sup>2</sup> 0 17 <sup>e</sup>	5150.64881	1675	04 <sup>4</sup> 1 13 <sup>f</sup>	5216.87623
1496	06 <sup>2</sup> 0 23 <sup>e</sup>	5022.52856	1556	07 <sup>5</sup> 0 9 <sup>f</sup>	5084.39470	1616	04 <sup>2</sup> 0 39 <sup>e</sup>	5151.40398	1676	04 <sup>4</sup> 1 13 <sup>e</sup>	5216.87632
1497	07 <sup>3</sup> 0 9 <sup>e</sup>	5023.03615	1557	07 <sup>5</sup> 0 9 <sup>e</sup>	5084.39470	1617	05 <sup>1</sup> 0 33 <sup>e</sup>	5154.93949	1677	01 <sup>1</sup> 1 40 <sup>f</sup>	5216.98619
1498	07 <sup>3</sup> 0 9 <sup>f</sup>	5023.04186	1558	12 <sup>0</sup> 0 16 <sup>e</sup>	5085.22236	1618	03 <sup>1</sup> 1 25 <sup>e</sup>	5155.83010	1678	06 <sup>0</sup> 0 26 <sup>e</sup>	5219.11306
1499	07 <sup>1</sup> 0 10 <sup>f</sup>	5024.08209	1559	03 <sup>3</sup> 0 44 <sup>f</sup>	5085.86481	1619	10 <sup>0</sup> 0 35 <sup>e</sup>	5156.32901	1679	03 <sup>3</sup> 0 45 <sup>f</sup>	5219.40836
1500	00 <sup>0</sup> 0 58 <sup>e</sup>	5024.52101	1560	07 <sup>3</sup> 0 11 <sup>e</sup>	5086.24679	1620	04 <sup>0</sup> 1 13 <sup>e</sup>	5157.49365	1680	07 <sup>1</sup> 0 15 <sup>f</sup>	5221.49196

TABLE XI. The  $\text{H}^{12}\text{C}^{14}\text{N}$  rovibrational levels in  $\text{cm}^{-1}$ .

<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>
1681	07 <sup>5</sup> 0 13 <sup>f</sup>	5222.45978	1741	05 <sup>3</sup> 0 34 <sup>e</sup>	5303.41604	1801	13 <sup>1</sup> 0 2 <sup>e</sup>	5375.70741	1861	13 <sup>3</sup> 0 5 <sup>e</sup>	5441.04659
1682	07 <sup>5</sup> 0 13 <sup>e</sup>	5222.45978	1742	04 <sup>4</sup> 0 40 <sup>e</sup>	5303.85516	1802	13 <sup>1</sup> 0 2 <sup>f</sup>	5375.80162	1862	13 <sup>3</sup> 0 5 <sup>f</sup>	5441.04660
1683	04 <sup>0</sup> 0 40 <sup>e</sup>	5227.60502	1743	04 <sup>2</sup> 1 16 <sup>f</sup>	5305.82619	1803	04 <sup>2</sup> 0 41 <sup>f</sup>	5375.95907	1863	06 <sup>6</sup> 0 27 <sup>f</sup>	5441.20482
1684	01 <sup>1</sup> 2 15 <sup>e</sup>	5227.94670	1744	04 <sup>2</sup> 1 16 <sup>e</sup>	5306.67976	1804	07 <sup>1</sup> 0 18 <sup>f</sup>	5376.02815	1864	06 <sup>6</sup> 0 27 <sup>e</sup>	5441.20491
1685	01 <sup>1</sup> 2 15 <sup>f</sup>	5229.73456	1745	05 <sup>3</sup> 0 34 <sup>f</sup>	5307.61319	1805	01 <sup>1</sup> 2 18 <sup>e</sup>	5376.44605	1865	12 <sup>2</sup> 0 22 <sup>f</sup>	5444.79767
1686	03 <sup>1</sup> 1 26 <sup>e</sup>	5232.05076	1746	07 <sup>5</sup> 0 15 <sup>e</sup>	5309.48964	1806	01 <sup>1</sup> 2 18 <sup>f</sup>	5378.99075	1866	12 <sup>2</sup> 0 22 <sup>e</sup>	5445.76669
1687	01 <sup>1</sup> 0 55 <sup>e</sup>	5236.59271	1747	07 <sup>5</sup> 0 15 <sup>f</sup>	5309.48968	1807	12 <sup>2</sup> 0 21 <sup>f</sup>	5380.02511	1867	01 <sup>1</sup> 1 42 <sup>e</sup>	5446.93429
1688	07 <sup>7</sup> 0 11 <sup>f</sup>	5239.02278	1748	03 <sup>1</sup> 1 27 <sup>e</sup>	5311.18104	1808	12 <sup>2</sup> 0 21 <sup>e</sup>	5380.83985	1868	07 <sup>7</sup> 0 16 <sup>f</sup>	5448.28198
1689	07 <sup>7</sup> 0 11 <sup>e</sup>	5239.02278	1749	07 <sup>1</sup> 0 17 <sup>e</sup>	5311.76652	1809	06 <sup>0</sup> 0 28 <sup>e</sup>	5381.74309	1869	07 <sup>7</sup> 0 16 <sup>e</sup>	5448.28198
1690	06 <sup>2</sup> 0 26 <sup>f</sup>	5240.70772	1750	07 <sup>7</sup> 0 13 <sup>f</sup>	5313.76667	1810	05 <sup>1</sup> 0 35 <sup>f</sup>	5382.92977	1870	13 <sup>1</sup> 0 7 <sup>e</sup>	5449.29210
1691	03 <sup>1</sup> 1 26 <sup>f</sup>	5242.46979	1751	07 <sup>7</sup> 0 13 <sup>e</sup>	5313.76667	1811	13 <sup>1</sup> 0 3 <sup>e</sup>	5384.53877	1871	04 <sup>0</sup> 1 19 <sup>e</sup>	5449.60479
1692	04 <sup>0</sup> 1 15 <sup>e</sup>	5243.16298	1752	02 <sup>0</sup> 0 51 <sup>e</sup>	5316.38697	1812	13 <sup>1</sup> 0 3 <sup>f</sup>	5384.72718	1872	13 <sup>1</sup> 0 7 <sup>f</sup>	5450.17070
1693	12 <sup>0</sup> 0 19 <sup>e</sup>	5244.12930	1753	12 <sup>2</sup> 0 20 <sup>f</sup>	5318.18588	1813	04 <sup>2</sup> 0 41 <sup>e</sup>	5392.89365	1873	06 <sup>4</sup> 0 28 <sup>f</sup>	5452.31705
1694	07 <sup>3</sup> 0 15 <sup>e</sup>	5248.78380	1754	12 <sup>2</sup> 0 20 <sup>e</sup>	5318.86422	1814	03 <sup>1</sup> 1 28 <sup>e</sup>	5393.21887	1874	06 <sup>4</sup> 0 28 <sup>e</sup>	5452.52475
1695	07 <sup>3</sup> 0 15 <sup>f</sup>	5248.89789	1755	06 <sup>2</sup> 0 27 <sup>f</sup>	5321.25965	1815	04 <sup>0</sup> 1 18 <sup>e</sup>	5393.61531	1875	04 <sup>4</sup> 1 18 <sup>f</sup>	5453.50706
1696	06 <sup>2</sup> 0 26 <sup>e</sup>	5249.07476	1756	07 <sup>1</sup> 0 17 <sup>f</sup>	5321.52344	1816	10 <sup>0</sup> 1 0 <sup>e</sup>	5393.69773	1876	04 <sup>4</sup> 1 18 <sup>e</sup>	5453.50826
1697	02 <sup>0</sup> 1 34 <sup>e</sup>	5249.29100	1757	03 <sup>1</sup> 1 27 <sup>f</sup>	5322.35073	1817	00 <sup>0</sup> 1 47 <sup>e</sup>	5394.16797	1877	10 <sup>0</sup> 1 6 <sup>e</sup>	5454.92587
1698	04 <sup>2</sup> 0 40 <sup>f</sup>	5254.74047	1758	01 <sup>1</sup> 2 17 <sup>e</sup>	5324.04151	1818	13 <sup>1</sup> 0 4 <sup>e</sup>	5396.31341	1878	02 <sup>0</sup> 1 36 <sup>e</sup>	5456.85619
1699	05 <sup>1</sup> 0 34 <sup>e</sup>	5255.14276	1759	01 <sup>1</sup> 1 41 <sup>e</sup>	5324.50408	1819	10 <sup>0</sup> 1 1 <sup>e</sup>	5396.61358	1879	11 <sup>1</sup> 0 31 <sup>e</sup>	5457.32222
1700	00 <sup>0</sup> 1 46 <sup>e</sup>	5257.36943	1760	03 <sup>1</sup> 0 46 <sup>f</sup>	5325.96112	1820	13 <sup>1</sup> 0 4 <sup>f</sup>	5396.62739	1880	13 <sup>3</sup> 0 6 <sup>e</sup>	5458.78275
1701	04 <sup>4</sup> 1 14 <sup>f</sup>	5258.29310	1761	01 <sup>1</sup> 2 17 <sup>f</sup>	5326.31929	1821	01 <sup>1</sup> 0 56 <sup>e</sup>	5400.08223	1881	13 <sup>3</sup> 0 6 <sup>f</sup>	5458.78280
1702	04 <sup>4</sup> 1 14 <sup>e</sup>	5258.29326	1762	06 <sup>2</sup> 0 27 <sup>e</sup>	5330.59012	1822	04 <sup>4</sup> 1 17 <sup>f</sup>	5400.27294	1882	07 <sup>3</sup> 0 19 <sup>e</sup>	5459.43617
1703	04 <sup>2</sup> 1 15 <sup>f</sup>	5258.46237	1763	01 <sup>1</sup> 1 41 <sup>f</sup>	5337.13112	1823	04 <sup>4</sup> 1 17 <sup>e</sup>	5400.27370	1883	07 <sup>3</sup> 0 19 <sup>f</sup>	5459.88413
1704	01 <sup>1</sup> 0 55 <sup>f</sup>	5258.85288	1764	04 <sup>0</sup> 1 17 <sup>e</sup>	5340.54296	1824	07 <sup>7</sup> 0 15 <sup>f</sup>	5400.45779	1884	01 <sup>1</sup> 1 42 <sup>f</sup>	5460.16452
1705	05 <sup>5</sup> 0 33 <sup>e</sup>	5259.05763	1765	02 <sup>2</sup> 0 51 <sup>f</sup>	5343.55911	1825	07 <sup>7</sup> 0 15 <sup>e</sup>	5400.45779	1885	07 <sup>5</sup> 0 18 <sup>e</sup>	5462.52151
1706	05 <sup>5</sup> 0 33 <sup>f</sup>	5259.07181	1766	03 <sup>3</sup> 1 27 <sup>e</sup>	5346.75407	1826	07 <sup>3</sup> 0 18 <sup>e</sup>	5402.26647	1886	07 <sup>5</sup> 0 18 <sup>f</sup>	5462.52172
1707	04 <sup>2</sup> 1 15 <sup>e</sup>	5259.13303	1767	03 <sup>3</sup> 1 27 <sup>f</sup>	5347.08152	1827	10 <sup>0</sup> 1 2 <sup>e</sup>	5402.44523	1887	05 <sup>1</sup> 0 36 <sup>e</sup>	5464.26978
1708	12 <sup>2</sup> 0 19 <sup>f</sup>	5259.28150	1768	04 <sup>0</sup> 0 41 <sup>e</sup>	5348.09354	1828	07 <sup>3</sup> 0 18 <sup>f</sup>	5402.59492	1888	05 <sup>5</sup> 0 35 <sup>e</sup>	5464.43929
1709	12 <sup>2</sup> 0 19 <sup>e</sup>	5259.84030	1769	07 <sup>3</sup> 0 17 <sup>e</sup>	5348.10013	1829	06 <sup>2</sup> 0 28 <sup>f</sup>	5404.75069	1889	05 <sup>5</sup> 0 35 <sup>f</sup>	5464.46501
1710	07 <sup>1</sup> 0 16 <sup>e</sup>	5261.28779	1770	07 <sup>3</sup> 0 17 <sup>f</sup>	5348.33626	1830	03 <sup>1</sup> 1 28 <sup>f</sup>	5405.16072	1890	03 <sup>1</sup> 0 47 <sup>f</sup>	5464.54733
1711	10 <sup>0</sup> 0 36 <sup>e</sup>	5261.47325	1771	04 <sup>4</sup> 1 16 <sup>f</sup>	5349.99210	1831	05 <sup>3</sup> 0 35 <sup>e</sup>	5407.72900	1891	11 <sup>1</sup> 0 31 <sup>f</sup>	5464.77591
1712	07 <sup>5</sup> 0 14 <sup>e</sup>	5264.47527	1772	04 <sup>4</sup> 1 16 <sup>e</sup>	5349.99257	1832	07 <sup>5</sup> 0 17 <sup>e</sup>	5408.51325	1892	04 <sup>2</sup> 1 19 <sup>f</sup>	5465.61045
1713	07 <sup>5</sup> 0 14 <sup>f</sup>	5264.47528	1773	03 <sup>3</sup> 0 46 <sup>e</sup>	5350.44531	1833	07 <sup>5</sup> 0 17 <sup>f</sup>	5408.51337	1893	04 <sup>2</sup> 1 19 <sup>e</sup>	5467.21254
1714	03 <sup>3</sup> 1 26 <sup>e</sup>	5267.12336	1774	02 <sup>0</sup> 1 35 <sup>e</sup>	5351.63180	1834	04 <sup>2</sup> 1 18 <sup>f</sup>	5409.40213	1894	06 <sup>0</sup> 0 29 <sup>e</sup>	5467.43244
1715	03 <sup>3</sup> 1 26 <sup>f</sup>	5267.38628	1775	00 <sup>0</sup> 2 28 <sup>e</sup>	5355.04489	1835	04 <sup>2</sup> 1 18 <sup>e</sup>	5410.71942	1895	02 <sup>0</sup> 0 52 <sup>e</sup>	5468.47459
1716	02 <sup>2</sup> 1 34 <sup>f</sup>	5267.47451	1776	07 <sup>7</sup> 0 14 <sup>f</sup>	5355.61914	1836	13 <sup>1</sup> 0 5 <sup>e</sup>	5411.03089	1896	04 <sup>0</sup> 0 42 <sup>e</sup>	5471.47015
1717	07 <sup>1</sup> 0 16 <sup>f</sup>	5270.00896	1777	07 <sup>7</sup> 0 14 <sup>e</sup>	5355.61914	1837	10 <sup>0</sup> 1 3 <sup>e</sup>	5411.19253	1897	13 <sup>1</sup> 0 8 <sup>e</sup>	5472.83443
1718	04 <sup>2</sup> 0 40 <sup>e</sup>	5270.69025	1778	03 <sup>3</sup> 0 46 <sup>f</sup>	5355.89094	1838	13 <sup>1</sup> 0 5 <sup>f</sup>	5411.50178	1898	13 <sup>1</sup> 0 8 <sup>f</sup>	5473.96370
1719	02 <sup>2</sup> 1 34 <sup>e</sup>	5271.80087	1779	04 <sup>2</sup> 1 17 <sup>f</sup>	5356.14006	1839	05 <sup>3</sup> 0 35 <sup>f</sup>	5412.54508	1899	10 <sup>0</sup> 1 7 <sup>e</sup>	5475.33299
1720	00 <sup>0</sup> 2 27 <sup>e</sup>	5273.65296	1780	04 <sup>2</sup> 1 17 <sup>e</sup>	5357.20845	1840	13 <sup>3</sup> 0 3 <sup>f</sup>	5414.44151	1900	02 <sup>2</sup> 1 36 <sup>f</sup>	5475.79772
1721	01 <sup>1</sup> 2 16 <sup>e</sup>	5274.54132	1781	07 <sup>5</sup> 0 16 <sup>e</sup>	5357.50247	1841	13 <sup>3</sup> 0 3 <sup>e</sup>	5414.44151	1901	03 <sup>1</sup> 1 29 <sup>e</sup>	5478.16075
1722	07 <sup>7</sup> 0 12 <sup>f</sup>	5274.90102	1782	07 <sup>5</sup> 0 16 <sup>f</sup>	5357.50253	1842	06 <sup>2</sup> 0 28 <sup>e</sup>	5415.09454	1902	13 <sup>3</sup> 0 7 <sup>e</sup>	5479.47436
1723	07 <sup>7</sup> 0 12 <sup>e</sup>	5274.90102	1783	02 <sup>2</sup> 0 51 <sup>e</sup>	5357.53267	1843	07 <sup>1</sup> 0 19 <sup>e</sup>	5421.56756	1903	13 <sup>3</sup> 0 7 <sup>f</sup>	5479.47448
1724	01 <sup>1</sup> 2 16 <sup>f</sup>	5276.56681	1784	05 <sup>1</sup> 0 35 <sup>e</sup>	5358.25396	1844	10 <sup>0</sup> 1 4 <sup>e</sup>	5422.85526	1904	10 <sup>0</sup> 0 38 <sup>e</sup>	5480.42811
1725	05 <sup>1</sup> 0 34 <sup>f</sup>	5278.83016	1785	05 <sup>5</sup> 0 34 <sup>e</sup>	5360.26856	1845	01 <sup>1</sup> 0 56 <sup>f</sup>	5423.12312	1905	07 <sup>1</sup> 0 20 <sup>e</sup>	5480.88449
1726	11 <sup>1</sup> 0 29 <sup>e</sup>	5278.91520	1786	05 <sup>5</sup> 0 34 <sup>f</sup>	5360.28774	1846	04 <sup>4</sup> 0 41 <sup>f</sup>	5424.90267	1906	02 <sup>2</sup> 1 36 <sup>e</sup>	5480.98448
1727	06 <sup>6</sup> 0 25 <sup>f</sup>	5283.09097	1787	06 <sup>6</sup> 0 26 <sup>f</sup>	5360.66133	1847	04 <sup>4</sup> 0 41 <sup>e</sup>	5425.68514	1907	03 <sup>3</sup> 0 47 <sup>e</sup>	5489.31829
1728	06 <sup>6</sup> 0 25 <sup>e</sup>	5283.09100	1788	06 <sup>6</sup> 0 26 <sup>e</sup>	5360.66139	1848	13 <sup>3</sup> 0 4 <sup>f</sup>	5426.26611	1908	05 <sup>1</sup> 0 36 <sup>f</sup>	5489.92376
1729	11 <sup>1</sup> 0 29 <sup>f</sup>	5285.46199	1789	12 <sup>0</sup> 0 21 <sup>e</sup>	5364.68152	1849	13 <sup>3</sup> 0 4 <sup>e</sup>	5426.26611	1909	01 <sup>1</sup> 2 20 <sup>e</sup>	5489.96309
1730	06 <sup>4</sup> 0 26 <sup>f</sup>	5287.64510	1790	07 <sup>1</sup> 0 18 <sup>e</sup>	5365.19401	1850	13 <sup>1</sup> 0 6 <sup>e</sup>	5428.69067	1910	03 <sup>1</sup> 1 29 <sup>f</sup>	5490.86132
1731	06 <sup>4</sup> 0 26 <sup>e</sup>	5287.76116	1791	11 <sup>1</sup> 0 30 <sup>e</sup>	5366.66714	1851	03 <sup>3</sup> 1 28 <sup>e</sup>	5429.32012	1911	06 <sup>2</sup> 0 29 <sup>f</sup>	5491.21050
1732	04 <sup>0</sup> 1 16 <sup>e</sup>	5290.39101	1792	06 <sup>4</sup> 0 27 <sup>f</sup>	5368.48868	1852	12 <sup>0</sup> 0 22 <sup>e</sup>	5429.33425	1912	01 <sup>1</sup> 2 20 <sup>f</sup>	5493.08533
1733	07 <sup>3</sup> 0 16 <sup>e</sup>	5296.93878	1793	06 <sup>4</sup> 0 27 <sup>e</sup>	5368.64485	1853	13 <sup>1</sup> 0 6 <sup>f</sup>	5429.34979	1913	07 <sup>1</sup> 0 20 <sup>f</sup>	5493.97651
1734	07 <sup>3</sup> 0 16 <sup>f</sup>	5297.10491	1794	10 <sup>0</sup> 0 37 <sup>e</sup>	5369.50712	1854	03 <sup>3</sup> 1 28 <sup>f</sup>	5429.72431	1914	03 <sup>3</sup> 0 47 <sup>f</sup>	5495.30859
1735	03 <sup>1</sup> 0 46 <sup>e</sup>	5298.96264	1795	13 <sup>1</sup> 0 1 <sup>e</sup>	5369.81966	1855	01 <sup>1</sup> 2 19 <sup>e</sup>	5431.75369	1915	02 <sup>2</sup> 0 52 <sup>f</sup>	5496.30515
1736	06 <sup>0</sup> 0 27 <sup>e</sup>	5298.96929	1796	13 <sup>1</sup> 0 1 <sup>f</sup>	5369.85106	1856	07 <sup>1</sup> 0 19 <sup>f</sup>	5433.51526	1916	12 <sup>0</sup> 0 23 <sup>e</sup>	5496.90133
1737	04 <sup>4</sup> 1 15 <sup>f</sup>	5302.66526	1797	02 <sup>2</sup> 1 35 <sup>f</sup>	5370.18427	1857	01 <sup>1</sup> 2 19 <sup>f</sup>	5434.57989	1917	10 <sup>0</sup> 1 8 <sup>e</sup>	5498.65401
1738	04 <sup>4</sup> 1 15 <sup>e</sup>	5302.66554	1798	00 <sup>0</sup> 0 60 <sup>e</sup>	5371.45983	1858	03 <sup>1</sup> 0 47 <sup>e</sup>	5436.72177	1918	07 <sup>7</sup> 0 17 <sup>f</sup>	5499.09098
1739	12 <sup>0</sup> 0 20 <sup>e</sup>	5302.94569	1799	11 <sup>1</sup> 0 30 <sup>f</sup>	5373.66030	1859	10 <sup>0</sup> 1 5 <sup>e</sup>	5437.43316	1919	07 <sup>7</sup> 0 17 <sup>e</sup>	5499.09098
1740	04 <sup>4</sup> 0 40 <sup>f</sup>	5303.20699	1800	02 <sup>2</sup> 1 35 <sup>e</sup>	5374.93050	1860	00 <sup>0</sup> 2 29 <sup>e</sup>	5439.32440	1920	13 <sup>1</sup> 0 9 <sup>e</sup>	5499.31680

TABLE XII. The  $\text{H}^{12}\text{C}^{14}\text{N}$  rovibrational levels in  $\text{cm}^{-1}$ .

<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>
1921	04 <sup>2</sup> 0 42 <sup>f</sup>	5500.07728	1981	03 <sup>1</sup> 1 30 <sup>e</sup>	5566.00558	2041	05 <sup>1</sup> 1 4 <sup>e</sup>	5606.94850	2101	08 <sup>2</sup> 0 8 <sup>e</sup>	5650.31820
1922	13 <sup>1</sup> 0 9 <sup>f</sup>	5500.72784	1982	01 <sup>1</sup> 0 57 <sup>e</sup>	5566.41636	2042	05 <sup>1</sup> 1 4 <sup>f</sup>	5607.42179	2102	08 <sup>4</sup> 0 6 <sup>e</sup>	5651.35098
1923	06 <sup>2</sup> 0 29 <sup>e</sup>	5502.58088	1983	12 <sup>0</sup> 0 24 <sup>e</sup>	5567.38028	2043	07 <sup>1</sup> 0 22 <sup>e</sup>	5608.33787	2103	08 <sup>4</sup> 0 6 <sup>f</sup>	5651.35098
1924	13 <sup>3</sup> 0 8 <sup>e</sup>	5503.12116	1984	04 <sup>4</sup> 1 20 <sup>f</sup>	5568.83207	2044	07 <sup>7</sup> 0 19 <sup>f</sup>	5609.66037	2104	04 <sup>2</sup> 1 22 <sup>f</sup>	5651.89177
1925	13 <sup>3</sup> 0 8 <sup>f</sup>	5503.12143	1985	04 <sup>4</sup> 1 20 <sup>e</sup>	5568.83485	2045	07 <sup>7</sup> 0 19 <sup>e</sup>	5609.66037	2105	02 <sup>2</sup> 0 53 <sup>f</sup>	5651.92183
1926	04 <sup>0</sup> 1 20 <sup>e</sup>	5508.50838	1986	04 <sup>0</sup> 1 21 <sup>e</sup>	5570.32332	2046	08 <sup>0</sup> 0 7 <sup>e</sup>	5610.31421	2106	05 <sup>3</sup> 1 5 <sup>e</sup>	5651.97416
1927	04 <sup>4</sup> 1 19 <sup>f</sup>	5509.69370	1987	08 <sup>0</sup> 0 5 <sup>e</sup>	5571.11864	2047	06 <sup>6</sup> 0 29 <sup>f</sup>	5611.20663	2107	05 <sup>3</sup> 1 5 <sup>f</sup>	5651.97423
1928	04 <sup>4</sup> 1 19 <sup>e</sup>	5509.69555	1988	05 <sup>5</sup> 0 36 <sup>e</sup>	5571.56833	2048	06 <sup>6</sup> 0 29 <sup>e</sup>	5611.20684	2108	02 <sup>0</sup> 2 7 <sup>e</sup>	5653.75804
1929	02 <sup>2</sup> 0 52 <sup>e</sup>	5511.00418	1989	08 <sup>2</sup> 0 4 <sup>f</sup>	5571.58838	2049	01 <sup>1</sup> 2 22 <sup>e</sup>	5615.08142	2109	04 <sup>2</sup> 1 22 <sup>e</sup>	5654.57654
1930	12 <sup>2</sup> 0 23 <sup>f</sup>	5512.50198	1990	05 <sup>5</sup> 0 36 <sup>f</sup>	5571.60253	2050	02 <sup>2</sup> 2 4 <sup>f</sup>	5615.35065	2110	11 <sup>0</sup> 0 33 <sup>f</sup>	5655.75016
1931	12 <sup>2</sup> 0 23 <sup>e</sup>	5513.64408	1991	08 <sup>2</sup> 0 4 <sup>e</sup>	5571.60439	2051	02 <sup>2</sup> 2 4 <sup>e</sup>	5615.35208	2111	12 <sup>2</sup> 0 25 <sup>f</sup>	5656.69913
1932	03 <sup>3</sup> 1 29 <sup>e</sup>	5514.81973	1992	02 <sup>0</sup> 2 0 <sup>e</sup>	5571.73430	2052	02 <sup>0</sup> 2 5 <sup>e</sup>	5615.68108	2112	03 <sup>1</sup> 1 31 <sup>e</sup>	5656.75036
1933	05 <sup>3</sup> 0 36 <sup>e</sup>	5514.98861	1993	01 <sup>1</sup> 1 43 <sup>e</sup>	5572.23679	2053	00 <sup>0</sup> 2 31 <sup>e</sup>	5616.53800	2113	12 <sup>2</sup> 0 25 <sup>e</sup>	5658.24696
1934	03 <sup>3</sup> 1 29 <sup>f</sup>	5515.31445	1994	05 <sup>1</sup> 0 37 <sup>e</sup>	5573.18834	2054	08 <sup>4</sup> 0 4 <sup>e</sup>	5618.18094	2114	10 <sup>0</sup> 1 13 <sup>e</sup>	5658.94598
1935	04 <sup>2</sup> 0 42 <sup>e</sup>	5518.00790	1995	02 <sup>0</sup> 2 1 <sup>e</sup>	5574.66448	2055	08 <sup>4</sup> 0 4 <sup>f</sup>	5618.18094	2115	05 <sup>1</sup> 1 7 <sup>e</sup>	5660.03928
1936	07 <sup>5</sup> 0 19 <sup>e</sup>	5519.52671	1996	03 <sup>1</sup> 0 48 <sup>e</sup>	5577.35314	2056	01 <sup>1</sup> 2 22 <sup>f</sup>	5618.83925	2116	05 <sup>1</sup> 1 7 <sup>f</sup>	5661.36340
1937	07 <sup>5</sup> 0 19 <sup>f</sup>	5519.52707	1997	03 <sup>1</sup> 1 30 <sup>f</sup>	5579.50757	2057	10 <sup>0</sup> 1 12 <sup>e</sup>	5621.06510	2117	08 <sup>0</sup> 0 9 <sup>e</sup>	5661.47584
1938	07 <sup>3</sup> 0 20 <sup>e</sup>	5519.60735	1998	07 <sup>5</sup> 0 20 <sup>e</sup>	5579.52830	2058	05 <sup>1</sup> 1 5 <sup>e</sup>	5621.69779	2118	13 <sup>3</sup> 0 13 <sup>e</sup>	5665.67024
1939	07 <sup>3</sup> 0 20 <sup>f</sup>	5520.20746	1999	07 <sup>5</sup> 0 20 <sup>f</sup>	5579.52890	2059	05 <sup>1</sup> 1 5 <sup>f</sup>	5622.40758	2119	13 <sup>3</sup> 0 13 <sup>f</sup>	5665.67494
1940	05 <sup>3</sup> 0 36 <sup>f</sup>	5520.47119	2000	05 <sup>1</sup> 1 1 <sup>e</sup>	5580.39615	2060	02 <sup>0</sup> 0 53 <sup>e</sup>	5623.41825	2120	02 <sup>2</sup> 0 53 <sup>e</sup>	5667.36165
1941	06 <sup>6</sup> 0 28 <sup>f</sup>	5524.72031	2001	05 <sup>1</sup> 1 1 <sup>f</sup>	5580.44349	2061	07 <sup>1</sup> 0 22 <sup>f</sup>	5623.78667	2121	02 <sup>2</sup> 2 7 <sup>f</sup>	5668.05821
1942	06 <sup>6</sup> 0 28 <sup>e</sup>	5524.72045	2002	02 <sup>0</sup> 2 2 <sup>e</sup>	5580.52467	2062	05 <sup>3</sup> 0 37 <sup>e</sup>	5625.17899	2122	02 <sup>2</sup> 2 7 <sup>e</sup>	5668.07023
1943	04 <sup>2</sup> 1 20 <sup>f</sup>	5524.76295	2003	06 <sup>2</sup> 0 30 <sup>f</sup>	5580.57698	2063	05 <sup>3</sup> 1 3 <sup>f</sup>	5625.23770	2123	07 <sup>7</sup> 0 20 <sup>f</sup>	5669.41914
1944	10 <sup>0</sup> 1 9 <sup>e</sup>	5524.88840	2004	07 <sup>3</sup> 0 21 <sup>e</sup>	5582.77785	2064	05 <sup>3</sup> 1 3 <sup>e</sup>	5625.23770	2124	07 <sup>7</sup> 0 20 <sup>e</sup>	5669.41914
1945	08 <sup>0</sup> 0 0 <sup>e</sup>	5525.81284	2005	12 <sup>2</sup> 0 24 <sup>f</sup>	5583.13638	2065	08 <sup>2</sup> 0 7 <sup>f</sup>	5625.94589	2125	05 <sup>3</sup> 1 6 <sup>e</sup>	5669.79829
1946	00 <sup>0</sup> 2 30 <sup>e</sup>	5526.48947	2006	07 <sup>3</sup> 0 21 <sup>f</sup>	5583.56668	2066	08 <sup>2</sup> 0 7 <sup>e</sup>	5626.07965	2126	05 <sup>3</sup> 1 6 <sup>f</sup>	5669.79848
1947	04 <sup>2</sup> 1 20 <sup>e</sup>	5526.68722	2007	02 <sup>2</sup> 1 37 <sup>f</sup>	5584.31226	2067	04 <sup>2</sup> 0 43 <sup>f</sup>	5627.09156	2127	03 <sup>1</sup> 1 31 <sup>f</sup>	5671.06053
1948	13 <sup>1</sup> 0 10 <sup>e</sup>	5528.73826	2008	12 <sup>2</sup> 0 24 <sup>e</sup>	5584.47119	2068	13 <sup>3</sup> 0 12 <sup>e</sup>	5627.25320	2128	08 <sup>4</sup> 0 7 <sup>f</sup>	5672.45925
1949	08 <sup>0</sup> 0 1 <sup>e</sup>	5528.83592	2009	01 <sup>1</sup> 1 43 <sup>f</sup>	5586.08338	2069	13 <sup>3</sup> 0 12 <sup>f</sup>	5627.25613	2129	08 <sup>4</sup> 0 7 <sup>e</sup>	5672.45926
1950	13 <sup>3</sup> 0 9 <sup>e</sup>	5529.72283	2010	10 <sup>0</sup> 1 11 <sup>e</sup>	5586.09467	2070	06 <sup>4</sup> 0 30 <sup>f</sup>	5628.92176	2130	06 <sup>2</sup> 0 31 <sup>f</sup>	5672.88089
1951	13 <sup>3</sup> 0 9 <sup>f</sup>	5529.72337	2011	05 <sup>1</sup> 1 2 <sup>e</sup>	5586.29708	2071	06 <sup>4</sup> 0 30 <sup>e</sup>	5629.27731	2131	13 <sup>1</sup> 0 14 <sup>e</sup>	5675.79257
1952	13 <sup>1</sup> 0 10 <sup>f</sup>	5530.46206	2012	05 <sup>1</sup> 1 2 <sup>f</sup>	5586.43910	2072	02 <sup>2</sup> 2 5 <sup>f</sup>	5629.99243	2132	02 <sup>0</sup> 1 38 <sup>e</sup>	5675.94842
1953	00 <sup>0</sup> 1 48 <sup>e</sup>	5533.82431	2013	08 <sup>2</sup> 0 5 <sup>f</sup>	5586.69033	2073	02 <sup>2</sup> 2 5 <sup>e</sup>	5629.99577	2133	00 <sup>0</sup> 1 49 <sup>e</sup>	5676.33512
1954	08 <sup>0</sup> 0 2 <sup>e</sup>	5534.88093	2014	08 <sup>2</sup> 0 5 <sup>e</sup>	5586.72767	2074	04 <sup>4</sup> 1 21 <sup>f</sup>	5630.92131	2134	07 <sup>1</sup> 0 23 <sup>e</sup>	5676.46910
1955	06 <sup>4</sup> 0 29 <sup>f</sup>	5539.12865	2015	04 <sup>2</sup> 1 21 <sup>f</sup>	5586.85748	2075	04 <sup>4</sup> 1 21 <sup>e</sup>	5630.92541	2135	04 <sup>4</sup> 0 43 <sup>f</sup>	5677.10508
1956	06 <sup>4</sup> 0 29 <sup>e</sup>	5539.40183	2016	04 <sup>2</sup> 1 21 <sup>e</sup>	5589.14239	2076	03 <sup>3</sup> 0 48 <sup>e</sup>	5631.09423	2136	02 <sup>0</sup> 2 8 <sup>e</sup>	5677.18528
1957	07 <sup>1</sup> 0 21 <sup>e</sup>	5543.14213	2017	08 <sup>0</sup> 0 6 <sup>e</sup>	5589.21683	2077	05 <sup>3</sup> 0 37 <sup>f</sup>	5631.38683	2137	08 <sup>2</sup> 0 9 <sup>f</sup>	5677.25930
1958	08 <sup>0</sup> 0 3 <sup>e</sup>	5543.94555	2018	02 <sup>0</sup> 2 3 <sup>e</sup>	5589.31453	2078	02 <sup>0</sup> 2 6 <sup>e</sup>	5633.25625	2138	08 <sup>2</sup> 0 9 <sup>e</sup>	5677.60566
1959	00 <sup>0</sup> 0 61 <sup>e</sup>	5549.17597	2019	02 <sup>2</sup> 1 37 <sup>e</sup>	5589.95991	2079	08 <sup>4</sup> 0 5 <sup>e</sup>	5633.25822	2139	04 <sup>4</sup> 0 43 <sup>e</sup>	5678.22465
1960	04 <sup>4</sup> 0 42 <sup>f</sup>	5549.53627	2020	01 <sup>1</sup> 0 57 <sup>f</sup>	5590.24995	2080	08 <sup>4</sup> 0 5 <sup>f</sup>	5633.25822	2140	13 <sup>1</sup> 0 14 <sup>f</sup>	5679.07362
1961	08 <sup>2</sup> 0 2 <sup>f</sup>	5550.44222	2021	13 <sup>3</sup> 0 11 <sup>e</sup>	5591.78928	2081	08 <sup>0</sup> 0 8 <sup>e</sup>	5634.40327	2141	05 <sup>5</sup> 0 37 <sup>e</sup>	5681.65414
1962	08 <sup>2</sup> 0 2 <sup>e</sup>	5550.44328	2022	13 <sup>3</sup> 0 11 <sup>f</sup>	5591.79104	2082	13 <sup>1</sup> 0 13 <sup>e</sup>	5634.62621	2142	05 <sup>5</sup> 0 37 <sup>f</sup>	5681.69924
1963	04 <sup>4</sup> 0 42 <sup>e</sup>	5550.47508	2023	06 <sup>2</sup> 0 30 <sup>e</sup>	5593.04160	2083	04 <sup>0</sup> 1 22 <sup>e</sup>	5635.04711	2143	01 <sup>1</sup> 2 23 <sup>e</sup>	5681.98733
1964	11 <sup>1</sup> 0 32 <sup>e</sup>	5550.87826	2024	10 <sup>0</sup> 0 39 <sup>e</sup>	5594.23358	2084	05 <sup>3</sup> 1 4 <sup>e</sup>	5637.12061	2144	05 <sup>1</sup> 1 8 <sup>e</sup>	5683.62931
1965	01 <sup>1</sup> 2 21 <sup>e</sup>	5551.07282	2025	02 <sup>2</sup> 2 2 <sup>f</sup>	5594.85113	2085	05 <sup>3</sup> 1 4 <sup>f</sup>	5637.12063	2145	05 <sup>1</sup> 0 38 <sup>e</sup>	5685.00592
1966	07 <sup>7</sup> 0 18 <sup>f</sup>	5552.88404	2026	02 <sup>2</sup> 2 2 <sup>e</sup>	5594.85123	2086	13 <sup>1</sup> 0 13 <sup>f</sup>	5637.47247	2146	05 <sup>1</sup> 1 8 <sup>f</sup>	5685.33094
1967	07 <sup>7</sup> 0 18 <sup>e</sup>	5552.88404	2027	05 <sup>1</sup> 1 3 <sup>e</sup>	5595.14803	2087	03 <sup>3</sup> 0 48 <sup>f</sup>	5637.65717	2147	01 <sup>1</sup> 2 23 <sup>f</sup>	5686.08460
1968	10 <sup>0</sup> 1 10 <sup>e</sup>	5554.03552	2028	05 <sup>1</sup> 1 3 <sup>f</sup>	5595.43204	2088	05 <sup>1</sup> 1 6 <sup>e</sup>	5639.39505	2148	06 <sup>2</sup> 0 31 <sup>e</sup>	5686.46826
1969	01 <sup>1</sup> 2 21 <sup>f</sup>	5554.50563	2029	13 <sup>1</sup> 0 12 <sup>e</sup>	5596.39416	2089	05 <sup>1</sup> 1 6 <sup>f</sup>	5640.38850	2149	05 <sup>3</sup> 1 7 <sup>e</sup>	5690.59289
1970	08 <sup>0</sup> 0 4 <sup>e</sup>	5556.02632	2030	04 <sup>0</sup> 0 43 <sup>e</sup>	5597.73205	2090	12 <sup>0</sup> 0 25 <sup>e</sup>	5640.76865	2150	05 <sup>3</sup> 1 7 <sup>f</sup>	5690.59338
1971	06 <sup>0</sup> 0 30 <sup>e</sup>	5556.03589	2031	13 <sup>1</sup> 0 12 <sup>f</sup>	5598.83577	2091	07 <sup>5</sup> 0 21 <sup>e</sup>	5642.52569	2151	02 <sup>2</sup> 2 8 <sup>f</sup>	5691.48126
1972	07 <sup>1</sup> 0 21 <sup>f</sup>	5557.40325	2032	05 <sup>1</sup> 0 37 <sup>f</sup>	5599.80947	2092	07 <sup>5</sup> 0 21 <sup>f</sup>	5642.52668	2152	02 <sup>2</sup> 2 8 <sup>e</sup>	5691.50130
1973	11 <sup>1</sup> 0 32 <sup>f</sup>	5558.80663	2033	02 <sup>0</sup> 2 4 <sup>e</sup>	5601.03356	2093	04 <sup>2</sup> 0 43 <sup>e</sup>	5646.02665	2153	08 <sup>0</sup> 0 10 <sup>e</sup>	5691.52343
1974	13 <sup>3</sup> 0 10 <sup>e</sup>	5559.27900	2034	03 <sup>3</sup> 1 30 <sup>e</sup>	5603.25133	2094	11 <sup>1</sup> 0 33 <sup>e</sup>	5647.33305	2154	07 <sup>1</sup> 0 23 <sup>f</sup>	5693.11791
1975	13 <sup>3</sup> 0 10 <sup>f</sup>	5559.28001	2035	02 <sup>2</sup> 2 3 <sup>f</sup>	5603.63678	2095	06 <sup>0</sup> 0 31 <sup>e</sup>	5647.55127	2155	03 <sup>3</sup> 1 31 <sup>e</sup>	5694.61282
1976	08 <sup>2</sup> 0 3 <sup>f</sup>	5559.50534	2036	02 <sup>2</sup> 2 3 <sup>e</sup>	5603.63726	2096	02 <sup>2</sup> 2 6 <sup>f</sup>	5647.56176	2156	03 <sup>3</sup> 1 31 <sup>f</sup>	5695.33583
1977	08 <sup>2</sup> 0 3 <sup>e</sup>	5559.51069	2037	03 <sup>3</sup> 1 30 <sup>f</sup>	5603.85172	2097	02 <sup>2</sup> 2 6 <sup>e</sup>	5647.56844	2157	02 <sup>2</sup> 1 38 <sup>f</sup>	5695.72520
1978	13 <sup>1</sup> 0 11 <sup>e</sup>	5561.09777	2038	08 <sup>2</sup> 0 6 <sup>f</sup>	5604.80999	2098	07 <sup>5</sup> 0 22 <sup>e</sup>	5648.94523	2158	04 <sup>4</sup> 1 22 <sup>f</sup>	5695.96051
1979	13 <sup>1</sup> 0 11 <sup>f</sup>	5563.16515	2039	08 <sup>2</sup> 0 6 <sup>e</sup>	5604.88453	2099	07 <sup>3</sup> 0 22 <sup>f</sup>	5649.96769	2159	04 <sup>4</sup> 1 22 <sup>e</sup>	5695.96646
1980	02 <sup>0</sup> 1 37 <sup>e</sup>	5564.96246	2040	03 <sup>1</sup> 0 48 <sup>f</sup>	5606.00379	2100	08 <sup>2</sup> 0 8 <sup>f</sup>	5650.09631	2160	08 <sup>4</sup> 0 8 <sup>f</sup>	5696.58304

TABLE XIII. The  $\text{H}^{12}\text{C}^{14}\text{N}$  rovibrational levels in  $\text{cm}^{-1}$ .

<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>
2161	08 <sup>4</sup> 0 8 <sup>e</sup>	5696.58307	2221	05 <sup>3</sup> 0 38 <sup>f</sup>	5745.28674	2281	04 <sup>2</sup> 1 24 <sup>e</sup>	5794.37350	2341	04 <sup>0</sup> 1 25 <sup>e</sup>	5846.64991
2162	10 <sup>0</sup> 1 14 <sup>e</sup>	5699.73639	2222	11 <sup>1</sup> 0 34 <sup>e</sup>	5746.68430	2282	05 <sup>5</sup> 0 38 <sup>e</sup>	5794.69509	2342	03 <sup>1</sup> 1 33 <sup>e</sup>	5846.93082
2163	01 <sup>1</sup> 1 44 <sup>e</sup>	5700.40858	2223	02 <sup>2</sup> 2 10 <sup>f</sup>	5747.10476	2283	05 <sup>5</sup> 0 38 <sup>f</sup>	5794.75413	2343	13 <sup>3</sup> 0 17 <sup>e</sup>	5848.85743
2164	06 <sup>6</sup> 0 30 <sup>f</sup>	5700.66259	2224	02 <sup>2</sup> 2 10 <sup>e</sup>	5747.15195	2284	12 <sup>0</sup> 0 27 <sup>e</sup>	5796.26417	2344	13 <sup>3</sup> 0 17 <sup>f</sup>	5848.88025
2165	06 <sup>6</sup> 0 30 <sup>e</sup>	5700.66291	2225	07 <sup>1</sup> 0 24 <sup>e</sup>	5747.53326	2285	07 <sup>7</sup> 0 22 <sup>f</sup>	5797.88045	2345	11 <sup>1</sup> 0 35 <sup>e</sup>	5848.92966
2166	02 <sup>2</sup> 1 38 <sup>e</sup>	5701.85378	2226	08 <sup>0</sup> 0 7 <sup>e</sup>	5749.79423	2286	07 <sup>7</sup> 0 22 <sup>e</sup>	5797.88045	2346	07 <sup>5</sup> 0 24 <sup>e</sup>	5849.48654
2167	04 <sup>0</sup> 1 23 <sup>e</sup>	5702.67750	2227	08 <sup>6</sup> 0 7 <sup>f</sup>	5749.79423	2287	13 <sup>3</sup> 0 16 <sup>e</sup>	5798.63416	2347	07 <sup>5</sup> 0 24 <sup>f</sup>	5849.49032
2168	02 <sup>0</sup> 2 9 <sup>e</sup>	5703.53663	2228	05 <sup>5</sup> 1 7 <sup>f</sup>	5750.24779	2288	13 <sup>3</sup> 0 16 <sup>f</sup>	5798.65012	2348	05 <sup>1</sup> 1 13 <sup>f</sup>	5849.99519
2169	13 <sup>3</sup> 0 14 <sup>e</sup>	5707.03984	2229	05 <sup>5</sup> 1 7 <sup>e</sup>	5750.24779	2289	08 <sup>0</sup> 0 13 <sup>e</sup>	5799.43335	2349	02 <sup>2</sup> 2 13 <sup>f</sup>	5852.47258
2170	13 <sup>3</sup> 0 14 <sup>f</sup>	5707.04711	2230	03 <sup>1</sup> 0 49 <sup>f</sup>	5750.32768	2290	05 <sup>1</sup> 0 39 <sup>e</sup>	5799.72055	2350	02 <sup>2</sup> 2 13 <sup>e</sup>	5852.60221
2171	08 <sup>2</sup> 0 10 <sup>f</sup>	5707.43265	2231	03 <sup>1</sup> 1 32 <sup>e</sup>	5750.39291	2291	02 <sup>0</sup> 2 12 <sup>e</sup>	5800.11943	2351	05 <sup>3</sup> 0 39 <sup>e</sup>	5854.36789
2172	08 <sup>2</sup> 0 10 <sup>e</sup>	5707.94749	2232	13 <sup>3</sup> 0 15 <sup>e</sup>	5751.36138	2292	05 <sup>5</sup> 1 9 <sup>f</sup>	5800.62222	2352	08 <sup>2</sup> 0 14 <sup>f</sup>	5858.17736
2173	07 <sup>5</sup> 0 22 <sup>e</sup>	5708.51830	2233	13 <sup>3</sup> 0 15 <sup>f</sup>	5751.37229	2293	05 <sup>5</sup> 1 9 <sup>e</sup>	5800.62222	2353	11 <sup>1</sup> 0 35 <sup>f</sup>	5858.36614
2174	07 <sup>5</sup> 0 22 <sup>f</sup>	5708.51987	2234	01 <sup>1</sup> 2 24 <sup>e</sup>	5751.78893	2294	08 <sup>6</sup> 0 9 <sup>e</sup>	5800.86007	2354	04 <sup>0</sup> 0 45 <sup>e</sup>	5858.90003
2175	00 <sup>0</sup> 2 32 <sup>e</sup>	5709.46783	2235	08 <sup>4</sup> 0 10 <sup>f</sup>	5753.87728	2295	08 <sup>6</sup> 0 9 <sup>f</sup>	5800.86007	2355	08 <sup>2</sup> 0 14 <sup>e</sup>	5859.94856
2176	05 <sup>1</sup> 1 9 <sup>e</sup>	5710.16384	2236	08 <sup>4</sup> 0 10 <sup>e</sup>	5753.87747	2296	05 <sup>3</sup> 1 11 <sup>e</sup>	5803.47292	2356	05 <sup>3</sup> 0 39 <sup>f</sup>	5862.16525
2177	10 <sup>0</sup> 0 40 <sup>e</sup>	5710.92088	2237	11 <sup>1</sup> 0 34 <sup>f</sup>	5755.60414	2297	05 <sup>3</sup> 1 11 <sup>f</sup>	5803.47997	2357	08 <sup>4</sup> 0 13 <sup>f</sup>	5862.43554
2178	05 <sup>5</sup> 1 5 <sup>f</sup>	5711.72326	2238	01 <sup>1</sup> 2 24 <sup>f</sup>	5756.24001	2298	00 <sup>2</sup> 2 33 <sup>e</sup>	5805.27673	2358	08 <sup>4</sup> 0 13 <sup>e</sup>	5862.43709
2179	05 <sup>5</sup> 1 5 <sup>e</sup>	5711.72326	2239	04 <sup>2</sup> 0 44 <sup>f</sup>	5756.99831	2299	05 <sup>1</sup> 1 12 <sup>e</sup>	5807.41937	2359	05 <sup>5</sup> 1 11 <sup>f</sup>	5862.84355
2180	05 <sup>1</sup> 1 9 <sup>f</sup>	5712.28955	2240	01 <sup>1</sup> 0 58 <sup>f</sup>	5760.22932	2300	04 <sup>4</sup> 0 44 <sup>f</sup>	5807.60627	2360	05 <sup>5</sup> 1 11 <sup>e</sup>	5862.84355
2181	05 <sup>1</sup> 0 38 <sup>f</sup>	5712.58453	2241	08 <sup>0</sup> 0 12 <sup>e</sup>	5760.51000	2301	04 <sup>4</sup> 0 44 <sup>e</sup>	5808.93341	2361	03 <sup>1</sup> 1 33 <sup>f</sup>	5862.87935
2182	05 <sup>3</sup> 1 8 <sup>e</sup>	5714.35785	2242	04 <sup>4</sup> 1 23 <sup>f</sup>	5763.94874	2302	02 <sup>2</sup> 1 39 <sup>f</sup>	5810.03382	2362	08 <sup>6</sup> 0 11 <sup>e</sup>	5863.97541
2183	05 <sup>3</sup> 1 8 <sup>f</sup>	5714.35893	2243	04 <sup>4</sup> 1 23 <sup>e</sup>	5763.95723	2303	02 <sup>2</sup> 0 54 <sup>f</sup>	5810.40535	2363	08 <sup>6</sup> 0 11 <sup>f</sup>	5863.97541
2184	01 <sup>1</sup> 1 44 <sup>f</sup>	5714.88463	2244	02 <sup>0</sup> 2 11 <sup>e</sup>	5765.00544	2304	05 <sup>1</sup> 1 12 <sup>f</sup>	5811.09269	2364	04 <sup>2</sup> 1 25 <sup>f</sup>	5864.60908
2185	12 <sup>0</sup> 0 26 <sup>e</sup>	5717.06406	2245	07 <sup>1</sup> 0 24 <sup>f</sup>	5765.38835	2305	12 <sup>2</sup> 0 27 <sup>f</sup>	5812.60244	2365	07 <sup>3</sup> 0 25 <sup>e</sup>	5865.40022
2186	02 <sup>2</sup> 2 9 <sup>f</sup>	5717.83033	2246	03 <sup>1</sup> 1 32 <sup>f</sup>	5765.51828	2306	02 <sup>2</sup> 2 12 <sup>f</sup>	5814.42673	2366	06 <sup>2</sup> 0 33 <sup>f</sup>	5866.27467
2187	02 <sup>2</sup> 2 9 <sup>e</sup>	5717.86181	2247	13 <sup>1</sup> 0 16 <sup>e</sup>	5766.92252	2307	02 <sup>2</sup> 2 12 <sup>e</sup>	5814.52195	2367	07 <sup>0</sup> 0 23 <sup>f</sup>	5866.58113
2188	07 <sup>3</sup> 0 23 <sup>e</sup>	5718.10678	2248	06 <sup>2</sup> 0 32 <sup>f</sup>	5768.11585	2308	12 <sup>2</sup> 0 27 <sup>e</sup>	5814.63939	2368	07 <sup>0</sup> 0 23 <sup>e</sup>	5866.58113
2189	07 <sup>3</sup> 0 23 <sup>f</sup>	5719.40595	2249	05 <sup>3</sup> 1 10 <sup>e</sup>	5770.79810	2309	08 <sup>2</sup> 0 13 <sup>f</sup>	5815.98931	2369	03 <sup>1</sup> 0 50 <sup>e</sup>	5867.21906
2190	04 <sup>2</sup> 1 23 <sup>f</sup>	5719.86346	2250	05 <sup>3</sup> 1 10 <sup>f</sup>	5770.80213	2310	02 <sup>2</sup> 1 39 <sup>e</sup>	5816.66300	2370	07 <sup>3</sup> 0 25 <sup>f</sup>	5867.45242
2191	13 <sup>1</sup> 0 15 <sup>e</sup>	5719.89184	2251	13 <sup>1</sup> 0 16 <sup>f</sup>	5771.16213	2311	13 <sup>1</sup> 0 17 <sup>e</sup>	5816.88301	2371	04 <sup>2</sup> 1 25 <sup>e</sup>	5868.73118
2192	03 <sup>1</sup> 0 49 <sup>e</sup>	5720.85338	2252	05 <sup>1</sup> 1 11 <sup>e</sup>	5772.06050	2312	08 <sup>2</sup> 0 13 <sup>e</sup>	5817.34665	2372	13 <sup>1</sup> 0 18 <sup>e</sup>	5869.77168
2193	06 <sup>4</sup> 0 31 <sup>f</sup>	5721.69446	2253	04 <sup>0</sup> 1 24 <sup>e</sup>	5773.21241	2313	06 <sup>4</sup> 0 32 <sup>f</sup>	5817.44465	2373	13 <sup>1</sup> 0 18 <sup>f</sup>	5875.08541
2194	06 <sup>4</sup> 0 31 <sup>e</sup>	5722.15257	2254	08 <sup>6</sup> 0 8 <sup>e</sup>	5773.85275	2314	06 <sup>4</sup> 0 32 <sup>e</sup>	5818.02922	2374	05 <sup>3</sup> 1 13 <sup>e</sup>	5877.73022
2195	04 <sup>2</sup> 1 23 <sup>e</sup>	5722.98770	2255	08 <sup>6</sup> 0 8 <sup>f</sup>	5773.85275	2315	07 <sup>1</sup> 0 25 <sup>e</sup>	5821.52781	2375	05 <sup>3</sup> 1 13 <sup>f</sup>	5877.74904
2196	13 <sup>1</sup> 0 15 <sup>f</sup>	5723.63748	2256	05 <sup>5</sup> 1 8 <sup>f</sup>	5773.95394	2316	13 <sup>1</sup> 0 17 <sup>f</sup>	5821.64552	2376	12 <sup>0</sup> 0 28 <sup>e</sup>	5878.36669
2197	08 <sup>4</sup> 0 9 <sup>f</sup>	5723.72238	2257	05 <sup>5</sup> 1 8 <sup>e</sup>	5773.95394	2317	00 <sup>0</sup> 1 50 <sup>e</sup>	5821.69702	2377	02 <sup>0</sup> 2 14 <sup>e</sup>	5879.09678
2198	08 <sup>4</sup> 0 9 <sup>e</sup>	5723.72246	2258	05 <sup>1</sup> 1 11 <sup>f</sup>	5775.17259	2318	08 <sup>4</sup> 0 12 <sup>f</sup>	5823.23385	2378	08 <sup>8</sup> 0 8 <sup>e</sup>	5881.61737
2199	08 <sup>0</sup> 0 11 <sup>e</sup>	5724.53753	2259	03 <sup>3</sup> 0 49 <sup>e</sup>	5775.76955	2319	08 <sup>4</sup> 0 12 <sup>e</sup>	5823.23467	2379	08 <sup>8</sup> 0 8 <sup>f</sup>	5881.61737
2200	04 <sup>0</sup> 0 44 <sup>e</sup>	5726.87633	2260	08 <sup>2</sup> 0 12 <sup>f</sup>	5776.80045	2320	01 <sup>1</sup> 2 25 <sup>e</sup>	5824.48453	2380	06 <sup>2</sup> 0 33 <sup>e</sup>	5882.18690
2201	08 <sup>6</sup> 0 6 <sup>e</sup>	5728.75048	2261	04 <sup>2</sup> 0 44 <sup>e</sup>	5776.94354	2321	02 <sup>2</sup> 0 54 <sup>e</sup>	5826.60101	2381	08 <sup>0</sup> 0 15 <sup>e</sup>	5886.10758
2202	08 <sup>6</sup> 0 6 <sup>f</sup>	5728.75048	2262	07 <sup>5</sup> 0 23 <sup>e</sup>	5777.50547	2322	05 <sup>1</sup> 0 39 <sup>f</sup>	5828.24673	2382	03 <sup>3</sup> 1 33 <sup>e</sup>	5886.11673
2203	05 <sup>5</sup> 1 6 <sup>f</sup>	5729.50412	2263	07 <sup>5</sup> 0 23 <sup>f</sup>	5777.50793	2323	01 <sup>1</sup> 2 25 <sup>f</sup>	5829.30375	2383	05 <sup>1</sup> 1 14 <sup>e</sup>	5886.94922
2204	05 <sup>5</sup> 1 6 <sup>e</sup>	5729.50412	2264	08 <sup>2</sup> 0 12 <sup>e</sup>	5777.81409	2324	05 <sup>5</sup> 1 10 <sup>f</sup>	5830.25224	2384	03 <sup>3</sup> 1 33 <sup>f</sup>	5887.14299
2205	00 <sup>0</sup> 0 62 <sup>e</sup>	5729.71772	2265	02 <sup>2</sup> 2 11 <sup>f</sup>	5779.30383	2325	05 <sup>5</sup> 1 10 <sup>e</sup>	5830.25224	2385	06 <sup>6</sup> 0 32 <sup>f</sup>	5888.47849
2206	07 <sup>7</sup> 0 21 <sup>f</sup>	5732.15947	2266	02 <sup>2</sup> 2 11 <sup>e</sup>	5779.37193	2326	10 <sup>0</sup> 0 41 <sup>e</sup>	5830.48725	2386	06 <sup>6</sup> 0 32 <sup>e</sup>	5888.47922
2207	07 <sup>7</sup> 0 21 <sup>e</sup>	5732.15947	2267	02 <sup>0</sup> 0 54 <sup>e</sup>	5781.21440	2327	08 <sup>0</sup> 0 10 <sup>e</sup>	5830.91949	2387	04 <sup>2</sup> 0 45 <sup>f</sup>	5889.79393
2208	02 <sup>0</sup> 2 10 <sup>e</sup>	5732.81057	2268	06 <sup>2</sup> 0 32 <sup>e</sup>	5782.85322	2328	08 <sup>6</sup> 0 10 <sup>f</sup>	5830.91949	2388	05 <sup>1</sup> 1 14 <sup>f</sup>	5891.87725
2209	12 <sup>2</sup> 0 26 <sup>f</sup>	5733.18845	2269	03 <sup>3</sup> 0 49 <sup>f</sup>	5782.93237	2329	01 <sup>1</sup> 1 45 <sup>e</sup>	5831.44658	2389	10 <sup>0</sup> 1 18 <sup>e</sup>	5891.97299
2210	12 <sup>2</sup> 0 26 <sup>e</sup>	5734.97017	2270	08 <sup>4</sup> 0 11 <sup>f</sup>	5787.04777	2330	04 <sup>4</sup> 1 24 <sup>f</sup>	5834.88499	2390	02 <sup>2</sup> 2 14 <sup>f</sup>	5893.44305
2211	01 <sup>1</sup> 0 58 <sup>e</sup>	5735.59114	2271	08 <sup>4</sup> 0 11 <sup>e</sup>	5787.04818	2331	04 <sup>4</sup> 1 24 <sup>e</sup>	5834.89690	2391	02 <sup>2</sup> 2 14 <sup>e</sup>	5893.61290
2212	05 <sup>3</sup> 0 38 <sup>e</sup>	5738.30811	2272	03 <sup>3</sup> 1 32 <sup>e</sup>	5788.90197	2332	02 <sup>0</sup> 2 13 <sup>e</sup>	5838.15057	2392	12 <sup>2</sup> 0 28 <sup>f</sup>	5894.93918
2213	05 <sup>1</sup> 1 10 <sup>e</sup>	5739.64143	2273	03 <sup>3</sup> 1 32 <sup>f</sup>	5789.76641	2333	05 <sup>3</sup> 1 12 <sup>e</sup>	5839.11710	2393	12 <sup>2</sup> 0 28 <sup>e</sup>	5897.25300
2214	08 <sup>2</sup> 0 11 <sup>f</sup>	5740.61393	2274	02 <sup>0</sup> 1 39 <sup>e</sup>	5789.81128	2334	05 <sup>3</sup> 1 12 <sup>f</sup>	5839.12885	2394	03 <sup>1</sup> 0 50 <sup>f</sup>	5897.51616
2215	05 <sup>3</sup> 1 9 <sup>e</sup>	5741.09299	2275	10 <sup>0</sup> 1 16 <sup>e</sup>	5790.04189	2335	06 <sup>0</sup> 0 33 <sup>e</sup>	5839.31105	2395	05 <sup>5</sup> 1 12 <sup>f</sup>	5898.39566
2216	05 <sup>3</sup> 1 9 <sup>f</sup>	5741.09515	2276	07 <sup>3</sup> 0 24 <sup>e</sup>	5790.25953	2336	10 <sup>0</sup> 1 17 <sup>e</sup>	5839.55482	2396	05 <sup>5</sup> 1 12 <sup>e</sup>	5898.39566
2217	08 <sup>2</sup> 0 11 <sup>e</sup>	5741.34883	2277	04 <sup>2</sup> 1 24 <sup>f</sup>	5790.77008	2337	07 <sup>1</sup> 0 25 <sup>f</sup>	5840.58980	2397	07 <sup>1</sup> 0 26 <sup>e</sup>	5898.45022
2218	06 <sup>0</sup> 0 32 <sup>e</sup>	5741.97710	2278	07 <sup>3</sup> 0 24 <sup>f</sup>	5791.91148	2338	08 <sup>0</sup> 0 14 <sup>e</sup>	5841.30103	2398	08 <sup>6</sup> 0 12 <sup>e</sup>	5900.03365
2219	05 <sup>1</sup> 1 10 <sup>f</sup>	5742.23745	2279	06 <sup>6</sup> 0 31 <sup>f</sup>	5793.08696	2339	05 <sup>1</sup> 1 13 <sup>e</sup>	5845.71624	2399	08 <sup>6</sup> 0 12 <sup>f</sup>	5900.03365
2220	10 <sup>0</sup> 1 15 <sup>e</sup>	5743.43537	2280	06 <sup>6</sup> 0 31 <sup>e</sup>	5793.08745	2340	01 <sup>1</sup> 1 45 <sup>f</sup>	5846.56511	2400	01 <sup>1</sup> 2 26 <sup>e</sup>	5900.07236

TABLE XIV. The  $\text{H}^{12}\text{C}^{14}\text{N}$  rovibrational levels in  $\text{cm}^{-1}$ .

<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>
2401	13 <sup>3</sup> 0 18 <sup>e</sup>	5902.03036	2461	08 <sup>4</sup> 0 15 <sup>e</sup>	5949.89045	2521	05 <sup>3</sup> 1 16 <sup>f</sup>	6011.44145	2581	12 <sup>2</sup> 0 30 <sup>f</sup>	6068.37274
2402	13 <sup>3</sup> 0 18 <sup>f</sup>	5902.06233	2462	08 <sup>2</sup> 0 16 <sup>f</sup>	5951.53739	2522	07 <sup>7</sup> 0 25 <sup>f</sup>	6012.91761	2582	14 <sup>2</sup> 0 3 <sup>f</sup>	6069.71944
2403	08 <sup>2</sup> 0 15 <sup>f</sup>	5903.36124	2463	10 <sup>0</sup> 0 42 <sup>e</sup>	5952.92987	2523	07 <sup>7</sup> 0 25 <sup>e</sup>	6012.91761	2583	14 <sup>2</sup> 0 3 <sup>e</sup>	6069.72097
2404	00 <sup>0</sup> 2 34 <sup>e</sup>	5903.96239	2464	11 <sup>1</sup> 0 36 <sup>e</sup>	5954.06668	2524	03 <sup>1</sup> 0 51 <sup>e</sup>	6016.44669	2584	05 <sup>5</sup> 1 16 <sup>e</sup>	6070.20095
2405	08 <sup>4</sup> 0 14 <sup>f</sup>	5904.65281	2465	08 <sup>2</sup> 0 16 <sup>e</sup>	5954.36129	2525	13 <sup>3</sup> 0 20 <sup>e</sup>	6017.22158	2585	05 <sup>5</sup> 1 16 <sup>f</sup>	6070.20096
2406	08 <sup>4</sup> 0 14 <sup>e</sup>	5904.65560	2466	13 <sup>3</sup> 0 19 <sup>e</sup>	5958.15207	2526	13 <sup>3</sup> 0 20 <sup>f</sup>	6017.28105	2586	12 <sup>2</sup> 0 30 <sup>e</sup>	6071.30596
2407	01 <sup>1</sup> 2 26 <sup>f</sup>	5905.27401	2467	13 <sup>3</sup> 0 19 <sup>f</sup>	5958.19603	2527	06 <sup>4</sup> 0 34 <sup>f</sup>	6017.86797	2587	06 <sup>2</sup> 0 35 <sup>f</sup>	6071.35352
2408	08 <sup>2</sup> 0 15 <sup>e</sup>	5905.62042	2468	03 <sup>1</sup> 1 34 <sup>f</sup>	5963.13904	2528	06 <sup>4</sup> 0 34 <sup>e</sup>	6018.79372	2588	02 <sup>0</sup> 2 18 <sup>e</sup>	6071.98663
2409	02 <sup>0</sup> 1 40 <sup>e</sup>	5906.54849	2469	12 <sup>0</sup> 0 29 <sup>e</sup>	5963.36937	2529	02 <sup>0</sup> 2 17 <sup>e</sup>	6019.40320	2589	11 <sup>1</sup> 0 37 <sup>f</sup>	6072.60414
2410	01 <sup>1</sup> 0 59 <sup>e</sup>	5907.60256	2470	05 <sup>3</sup> 1 15 <sup>e</sup>	5963.86123	2530	04 <sup>2</sup> 1 27 <sup>f</sup>	6021.07353	2590	03 <sup>3</sup> 0 51 <sup>e</sup>	6073.80365
2411	08 <sup>8</sup> 0 9 <sup>e</sup>	5908.54336	2471	05 <sup>3</sup> 1 15 <sup>f</sup>	5963.90482	2531	05 <sup>5</sup> 1 15 <sup>e</sup>	6022.81132	2591	08 <sup>6</sup> 0 16 <sup>e</sup>	6074.29267
2412	08 <sup>8</sup> 0 9 <sup>f</sup>	5908.54336	2472	11 <sup>1</sup> 0 36 <sup>f</sup>	5964.03366	2532	05 <sup>5</sup> 1 15 <sup>f</sup>	6022.81133	2592	08 <sup>6</sup> 0 16 <sup>f</sup>	6074.29267
2413	04 <sup>4</sup> 1 25 <sup>f</sup>	5908.76820	2473	01 <sup>1</sup> 1 46 <sup>e</sup>	5965.34765	2533	07 <sup>3</sup> 0 27 <sup>e</sup>	6024.63113	2593	04 <sup>4</sup> 0 46 <sup>f</sup>	6077.39382
2414	04 <sup>4</sup> 1 25 <sup>e</sup>	5908.78470	2474	06 <sup>2</sup> 0 34 <sup>f</sup>	5967.35574	2534	04 <sup>2</sup> 0 46 <sup>f</sup>	6025.47479	2594	10 <sup>0</sup> 0 43 <sup>e</sup>	6078.24588
2415	05 <sup>5</sup> 0 39 <sup>e</sup>	5910.68951	2475	02 <sup>0</sup> 2 16 <sup>e</sup>	5969.72545	2535	02 <sup>0</sup> 1 41 <sup>e</sup>	6026.15775	2595	04 <sup>4</sup> 0 46 <sup>e</sup>	6079.22588
2416	04 <sup>2</sup> 0 45 <sup>e</sup>	5910.75225	2476	00 <sup>0</sup> 1 51 <sup>e</sup>	5969.90654	2536	08 <sup>6</sup> 0 15 <sup>e</sup>	6026.22493	2596	13 <sup>3</sup> 0 21 <sup>e</sup>	6079.23784
2417	05 <sup>5</sup> 0 39 <sup>f</sup>	5910.76623	2477	08 <sup>8</sup> 0 11 <sup>e</sup>	5971.36597	2537	08 <sup>6</sup> 0 15 <sup>f</sup>	6026.22493	2597	13 <sup>3</sup> 0 21 <sup>f</sup>	6079.31711
2418	00 <sup>0</sup> 0 63 <sup>e</sup>	5913.08080	2478	08 <sup>8</sup> 0 11 <sup>f</sup>	5971.36597	2538	04 <sup>2</sup> 1 27 <sup>e</sup>	6026.34956	2598	05 <sup>1</sup> 1 18 <sup>e</sup>	6081.20144
2419	06 <sup>4</sup> 0 33 <sup>f</sup>	5916.16999	2479	02 <sup>2</sup> 0 55 <sup>f</sup>	5971.75185	2539	07 <sup>3</sup> 0 27 <sup>f</sup>	6027.68383	2599	14 <sup>0</sup> 0 5 <sup>e</sup>	6081.47662
2420	06 <sup>4</sup> 0 33 <sup>e</sup>	5916.90899	2480	05 <sup>3</sup> 0 40 <sup>e</sup>	5973.35412	2540	05 <sup>1</sup> 1 17 <sup>e</sup>	6028.24459	2600	14 <sup>2</sup> 0 4 <sup>f</sup>	6081.58622
2421	05 <sup>1</sup> 0 40 <sup>e</sup>	5917.32905	2481	05 <sup>1</sup> 1 16 <sup>e</sup>	5978.21549	2541	05 <sup>5</sup> 0 40 <sup>e</sup>	6029.63565	2601	14 <sup>2</sup> 0 4 <sup>e</sup>	6081.59080
2422	07 <sup>1</sup> 0 26 <sup>f</sup>	5918.71470	2482	07 <sup>1</sup> 0 27 <sup>e</sup>	5978.29800	2542	05 <sup>5</sup> 0 40 <sup>f</sup>	6029.73464	2602	03 <sup>3</sup> 0 51 <sup>f</sup>	6082.24479
2423	05 <sup>3</sup> 1 14 <sup>e</sup>	5919.31180	2483	05 <sup>5</sup> 1 14 <sup>f</sup>	5978.38014	2543	02 <sup>2</sup> 2 17 <sup>f</sup>	6033.86005	2603	01 <sup>1</sup> 0 60 <sup>e</sup>	6082.44651
2424	05 <sup>3</sup> 1 14 <sup>f</sup>	5919.34088	2484	05 <sup>5</sup> 1 14 <sup>e</sup>	5978.38014	2544	02 <sup>2</sup> 2 17 <sup>e</sup>	6034.22888	2604	07 <sup>5</sup> 0 27 <sup>e</sup>	6083.38597
2425	02 <sup>0</sup> 2 15 <sup>e</sup>	5922.95584	2485	01 <sup>1</sup> 2 27 <sup>e</sup>	5978.55061	2545	05 <sup>1</sup> 1 17 <sup>f</sup>	6035.36775	2605	07 <sup>5</sup> 0 27 <sup>f</sup>	6083.39832
2426	04 <sup>0</sup> 1 26 <sup>e</sup>	5922.98822	2486	12 <sup>2</sup> 0 29 <sup>f</sup>	5980.19664	2546	14 <sup>0</sup> 0 0 <sup>e</sup>	6036.96011	2606	07 <sup>1</sup> 0 28 <sup>f</sup>	6083.70889
2427	03 <sup>3</sup> 0 50 <sup>e</sup>	5923.34060	2487	01 <sup>1</sup> 1 46 <sup>f</sup>	5981.12159	2547	05 <sup>1</sup> 0 41 <sup>e</sup>	6037.82845	2607	04 <sup>0</sup> 1 28 <sup>e</sup>	6084.36032
2428	07 <sup>5</sup> 0 25 <sup>e</sup>	5924.46081	2488	08 <sup>6</sup> 0 14 <sup>e</sup>	5981.15886	2548	08 <sup>0</sup> 0 18 <sup>e</sup>	6038.12173	2608	11 <sup>1</sup> 1 1 <sup>e</sup>	6086.26377
2429	07 <sup>5</sup> 0 25 <sup>f</sup>	5924.46651	2489	08 <sup>6</sup> 0 14 <sup>f</sup>	5981.15886	2549	14 <sup>0</sup> 0 1 <sup>e</sup>	6039.92877	2609	11 <sup>1</sup> 1 1 <sup>f</sup>	6086.27911
2430	13 <sup>1</sup> 0 19 <sup>e</sup>	5925.58678	2490	05 <sup>3</sup> 0 40 <sup>f</sup>	5982.01622	2550	06 <sup>0</sup> 0 35 <sup>e</sup>	6042.69578	2610	02 <sup>2</sup> 2 18 <sup>f</sup>	6086.50840
2431	02 <sup>2</sup> 1 40 <sup>f</sup>	5927.23530	2491	12 <sup>2</sup> 0 29 <sup>e</sup>	5982.80918	2551	14 <sup>0</sup> 0 2 <sup>e</sup>	6045.86571	2611	02 <sup>2</sup> 2 18 <sup>e</sup>	6086.96234
2432	05 <sup>1</sup> 1 15 <sup>e</sup>	5931.11632	2492	02 <sup>2</sup> 2 16 <sup>f</sup>	5984.12159	2552	13 <sup>1</sup> 0 21 <sup>e</sup>	6045.98903	2612	08 <sup>8</sup> 0 14 <sup>e</sup>	6088.01915
2433	03 <sup>3</sup> 0 50 <sup>f</sup>	5931.12976	2493	01 <sup>1</sup> 2 27 <sup>f</sup>	5984.14890	2553	08 <sup>8</sup> 0 13 <sup>e</sup>	6046.14624	2613	08 <sup>8</sup> 0 14 <sup>f</sup>	6088.01915
2434	13 <sup>1</sup> 0 19 <sup>f</sup>	5931.47943	2494	13 <sup>1</sup> 0 20 <sup>e</sup>	5984.32652	2554	08 <sup>8</sup> 0 13 <sup>f</sup>	6046.14624	2614	06 <sup>6</sup> 0 34 <sup>f</sup>	6088.15784
2435	01 <sup>1</sup> 0 59 <sup>f</sup>	5933.05711	2495	02 <sup>2</sup> 2 16 <sup>e</sup>	5984.42614	2555	02 <sup>2</sup> 1 41 <sup>f</sup>	6047.32675	2615	06 <sup>6</sup> 0 34 <sup>e</sup>	6088.15936
2436	08 <sup>0</sup> 0 16 <sup>e</sup>	5933.84864	2496	06 <sup>2</sup> 0 34 <sup>e</sup>	5984.46027	2556	04 <sup>2</sup> 0 46 <sup>e</sup>	6047.44653	2616	05 <sup>1</sup> 1 18 <sup>f</sup>	6089.13338
2437	02 <sup>2</sup> 1 40 <sup>e</sup>	5934.38441	2497	08 <sup>0</sup> 0 17 <sup>e</sup>	5984.52085	2557	03 <sup>1</sup> 0 51 <sup>f</sup>	6047.56637	2617	03 <sup>3</sup> 1 35 <sup>e</sup>	6089.28298
2438	05 <sup>1</sup> 1 15 <sup>f</sup>	5936.73572	2498	05 <sup>1</sup> 1 16 <sup>f</sup>	5984.56715	2558	03 <sup>1</sup> 1 35 <sup>e</sup>	6048.68195	2618	06 <sup>2</sup> 0 35 <sup>e</sup>	6089.70079
2439	05 <sup>5</sup> 1 13 <sup>f</sup>	5936.90804	2499	04 <sup>4</sup> 1 26 <sup>f</sup>	5985.59725	2559	08 <sup>4</sup> 0 17 <sup>f</sup>	6049.39750	2619	07 <sup>0</sup> 2 26 <sup>f</sup>	6090.55132
2440	05 <sup>5</sup> 1 13 <sup>e</sup>	5936.90804	2500	04 <sup>4</sup> 1 26 <sup>e</sup>	5985.61982	2560	08 <sup>4</sup> 0 17 <sup>e</sup>	6049.41056	2620	07 <sup>0</sup> 2 26 <sup>e</sup>	6090.55132
2441	02 <sup>2</sup> 2 15 <sup>f</sup>	5937.33779	2501	03 <sup>3</sup> 1 34 <sup>e</sup>	5986.25502	2561	12 <sup>0</sup> 0 30 <sup>e</sup>	6051.27001	2621	03 <sup>3</sup> 1 35 <sup>f</sup>	6090.73150
2442	02 <sup>2</sup> 2 15 <sup>e</sup>	5937.55417	2502	06 <sup>6</sup> 0 33 <sup>f</sup>	5986.83589	2562	13 <sup>1</sup> 0 21 <sup>f</sup>	6053.11945	2622	11 <sup>1</sup> 1 2 <sup>e</sup>	6092.09472
2443	07 <sup>7</sup> 0 24 <sup>f</sup>	5938.26053	2503	06 <sup>6</sup> 0 33 <sup>e</sup>	5986.83695	2563	14 <sup>0</sup> 0 3 <sup>e</sup>	6054.77017	2623	11 <sup>1</sup> 1 2 <sup>f</sup>	6092.14074
2444	07 <sup>7</sup> 0 24 <sup>e</sup>	5938.26053	2504	03 <sup>3</sup> 1 34 <sup>f</sup>	5987.46496	2564	02 <sup>2</sup> 1 41 <sup>e</sup>	6055.01477	2624	08 <sup>0</sup> 0 19 <sup>e</sup>	6094.64947
2445	08 <sup>8</sup> 0 10 <sup>e</sup>	5938.45971	2505	02 <sup>2</sup> 0 55 <sup>e</sup>	5988.71818	2565	08 <sup>2</sup> 0 18 <sup>f</sup>	6056.85122	2625	05 <sup>3</sup> 0 41 <sup>e</sup>	6095.26251
2446	08 <sup>8</sup> 0 10 <sup>f</sup>	5938.45971	2506	13 <sup>1</sup> 0 20 <sup>f</sup>	5990.82502	2566	01 <sup>1</sup> 2 28 <sup>e</sup>	6059.91737	2626	14 <sup>2</sup> 0 5 <sup>f</sup>	6096.41886
2447	08 <sup>6</sup> 0 13 <sup>e</sup>	5939.09495	2507	04 <sup>0</sup> 0 46 <sup>e</sup>	5993.80007	2567	14 <sup>2</sup> 0 2 <sup>f</sup>	6060.81898	2627	14 <sup>2</sup> 0 5 <sup>e</sup>	6096.42955
2448	08 <sup>6</sup> 0 13 <sup>f</sup>	5939.09495	2508	08 <sup>4</sup> 0 16 <sup>f</sup>	5998.13389	2568	14 <sup>2</sup> 0 2 <sup>e</sup>	6060.81928	2628	00 <sup>0</sup> 0 64 <sup>e</sup>	6099.26089
2449	06 <sup>0</sup> 0 34 <sup>e</sup>	5939.55213	2509	08 <sup>4</sup> 0 16 <sup>e</sup>	5998.14197	2569	08 <sup>2</sup> 0 18 <sup>e</sup>	6061.03925	2629	14 <sup>0</sup> 0 6 <sup>e</sup>	6099.27517
2450	04 <sup>4</sup> 0 45 <sup>f</sup>	5941.03688	2510	07 <sup>1</sup> 0 27 <sup>f</sup>	5999.75634	2570	07 <sup>1</sup> 0 28 <sup>e</sup>	6061.06866	2630	11 <sup>1</sup> 1 3 <sup>e</sup>	6100.84095
2451	04 <sup>2</sup> 1 26 <sup>f</sup>	5941.37781	2511	04 <sup>0</sup> 1 27 <sup>e</sup>	6002.22559	2571	05 <sup>3</sup> 1 17 <sup>e</sup>	6061.86067	2631	11 <sup>1</sup> 1 3 <sup>f</sup>	6100.93299
2452	02 <sup>0</sup> 0 55 <sup>e</sup>	5941.85939	2512	07 <sup>5</sup> 0 26 <sup>e</sup>	6002.42755	2572	05 <sup>3</sup> 1 17 <sup>f</sup>	6061.95148	2632	01 <sup>1</sup> 1 47 <sup>e</sup>	6102.10858
2453	04 <sup>4</sup> 0 45 <sup>e</sup>	5942.60076	2513	07 <sup>5</sup> 0 26 <sup>f</sup>	6002.43600	2573	11 <sup>1</sup> 0 37 <sup>e</sup>	6062.09288	2633	08 <sup>4</sup> 0 18 <sup>f</sup>	6103.67625
2454	07 <sup>3</sup> 0 26 <sup>e</sup>	5943.52534	2514	08 <sup>2</sup> 0 17 <sup>f</sup>	6002.70203	2574	04 <sup>4</sup> 1 27 <sup>f</sup>	6065.37098	2634	04 <sup>2</sup> 1 28 <sup>f</sup>	6103.69344
2455	07 <sup>3</sup> 0 26 <sup>f</sup>	5946.04326	2515	10 <sup>0</sup> 1 20 <sup>e</sup>	6005.51999	2575	04 <sup>4</sup> 1 27 <sup>e</sup>	6065.40148	2635	08 <sup>4</sup> 0 18 <sup>e</sup>	6103.69679
2456	04 <sup>2</sup> 1 26 <sup>e</sup>	5946.05767	2516	00 <sup>0</sup> 2 35 <sup>e</sup>	6005.52245	2576	01 <sup>1</sup> 2 28 <sup>f</sup>	6065.92647	2636	05 <sup>3</sup> 0 41 <sup>f</sup>	6104.83320
2457	03 <sup>1</sup> 1 34 <sup>e</sup>	5946.36108	2517	08 <sup>2</sup> 0 17 <sup>e</sup>	6006.16881	2577	03 <sup>1</sup> 1 35 <sup>f</sup>	6066.29260	2637	02 <sup>0</sup> 0 56 <sup>e</sup>	6105.34952
2458	05 <sup>1</sup> 0 40 <sup>f</sup>	5946.79399	2518	08 <sup>8</sup> 0 12 <sup>e</sup>	6007.26166	2578	14 <sup>0</sup> 0 4 <sup>e</sup>	6066.64098	2638	07 <sup>3</sup> 0 28 <sup>e</sup>	6108.71259
2459	10 <sup>0</sup> 1 19 <sup>e</sup>	5947.29515	2519	08 <sup>8</sup> 0 12 <sup>f</sup>	6007.26166	2579	10 <sup>0</sup> 1 21 <sup>e</sup>	6066.64611	2639	01 <sup>1</sup> 0 60 <sup>f</sup>	6108.72914
2460	08 <sup>4</sup> 0 15 <sup>f</sup>	5949.88562	2520	05 <sup>3</sup> 1 16 <sup>e</sup>	6011.37779	2580	05 <sup>1</sup> 0 41 <sup>f</sup>	6068.22430	2640	04 <sup>2</sup> 1 28 <sup>e</sup>	6109.60320



TABLE XV. The H<sup>12</sup>C<sup>14</sup>N rovibrational levels in cm<sup>-1</sup>.

<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>
2641	00 <sup>0</sup> 2 36 <sup>e</sup>	6109.95446	2701	14 <sup>4</sup> 0 6 <sup>f</sup>	6158.92733	2761	02 <sup>2</sup> 2 20 <sup>e</sup>	6201.22088	2821	14 <sup>2</sup> 0 11 <sup>f</sup>	6247.65931
2642	13 <sup>1</sup> 0 22 <sup>e</sup>	6110.57238	2702	12 <sup>2</sup> 0 31 <sup>f</sup>	6159.46532	2762	14 <sup>4</sup> 0 8 <sup>e</sup>	6203.34740	2822	14 <sup>2</sup> 0 11 <sup>e</sup>	6247.87561
2643	07 <sup>3</sup> 0 28 <sup>f</sup>	6112.37183	2703	08 <sup>4</sup> 0 19 <sup>f</sup>	6160.96986	2763	14 <sup>4</sup> 0 8 <sup>f</sup>	6203.34740	2823	13 <sup>1</sup> 0 24 <sup>e</sup>	6248.49358
2644	11 <sup>1</sup> 1 4 <sup>e</sup>	6112.50228	2704	08 <sup>4</sup> 0 19 <sup>e</sup>	6161.00136	2764	05 <sup>1</sup> 1 20 <sup>f</sup>	6205.54149	2824	12 <sup>2</sup> 0 32 <sup>f</sup>	6253.47215
2645	11 <sup>1</sup> 1 4 <sup>f</sup>	6112.65566	2705	05 <sup>1</sup> 0 42 <sup>e</sup>	6161.21578	2765	09 <sup>1</sup> 0 2 <sup>e</sup>	6206.31267	2825	07 <sup>5</sup> 0 29 <sup>e</sup>	6254.27448
2646	08 <sup>2</sup> 0 19 <sup>f</sup>	6113.98084	2706	12 <sup>2</sup> 0 31 <sup>e</sup>	6162.74117	2766	10 <sup>0</sup> 0 44 <sup>e</sup>	6206.43232	2826	07 <sup>5</sup> 0 29 <sup>f</sup>	6254.29979
2647	14 <sup>2</sup> 0 6 <sup>f</sup>	6114.21681	2707	04 <sup>2</sup> 0 47 <sup>f</sup>	6164.03725	2767	09 <sup>1</sup> 0 2 <sup>f</sup>	6206.56716	2827	06 <sup>1</sup> 0 0 <sup>e</sup>	6254.40590
2648	14 <sup>2</sup> 0 6 <sup>e</sup>	6114.23819	2708	11 <sup>1</sup> 1 7 <sup>e</sup>	6164.97362	2768	13 <sup>3</sup> 0 23 <sup>e</sup>	6212.10603	2828	07 <sup>7</sup> 0 28 <sup>f</sup>	6254.74420
2649	05 <sup>3</sup> 1 18 <sup>e</sup>	6115.30891	2709	11 <sup>1</sup> 1 7 <sup>f</sup>	6165.40290	2769	13 <sup>3</sup> 0 23 <sup>f</sup>	6212.24132	2829	07 <sup>7</sup> 0 28 <sup>e</sup>	6254.74420
2650	05 <sup>3</sup> 1 18 <sup>f</sup>	6115.43577	2710	07 <sup>5</sup> 0 28 <sup>e</sup>	6167.33524	2770	11 <sup>1</sup> 1 9 <sup>e</sup>	6214.52294	2830	12 <sup>2</sup> 0 32 <sup>e</sup>	6257.11251
2651	13 <sup>1</sup> 0 22 <sup>f</sup>	6118.35981	2711	07 <sup>5</sup> 0 28 <sup>f</sup>	6167.35304	2771	14 <sup>2</sup> 0 10 <sup>f</sup>	6215.04691	2831	04 <sup>1</sup> 0 30 <sup>e</sup>	6257.31504
2652	01 <sup>1</sup> 1 47 <sup>f</sup>	6118.55078	2712	03 <sup>1</sup> 0 52 <sup>e</sup>	6168.53271	2772	14 <sup>2</sup> 0 10 <sup>e</sup>	6215.19717	2832	06 <sup>1</sup> 0 1 <sup>e</sup>	6257.38895
2653	08 <sup>2</sup> 0 19 <sup>e</sup>	6118.96773	2713	04 <sup>0</sup> 1 29 <sup>e</sup>	6169.39071	2773	11 <sup>1</sup> 1 9 <sup>f</sup>	6215.21255	2833	00 <sup>0</sup> 3 4 <sup>e</sup>	6257.55328
2654	14 <sup>0</sup> 0 7 <sup>e</sup>	6120.03435	2714	02 <sup>2</sup> 1 42 <sup>f</sup>	6170.30522	2774	09 <sup>1</sup> 0 3 <sup>e</sup>	6215.28117	2834	05 <sup>1</sup> 1 21 <sup>e</sup>	6257.61599
2655	05 <sup>5</sup> 1 17 <sup>e</sup>	6120.54833	2715	14 <sup>0</sup> 0 9 <sup>e</sup>	6170.42369	2775	09 <sup>1</sup> 0 3 <sup>f</sup>	6215.79008	2835	13 <sup>1</sup> 0 24 <sup>f</sup>	6257.66580
2656	05 <sup>5</sup> 1 17 <sup>f</sup>	6120.54835	2716	07 <sup>1</sup> 0 29 <sup>f</sup>	6170.56746	2776	08 <sup>0</sup> 0 21 <sup>e</sup>	6216.48044	2836	06 <sup>0</sup> 0 37 <sup>e</sup>	6257.68653
2657	00 <sup>0</sup> 1 52 <sup>e</sup>	6120.96017	2717	07 <sup>7</sup> 0 27 <sup>f</sup>	6171.16056	2777	04 <sup>4</sup> 0 47 <sup>f</sup>	6216.67389	2837	01 <sup>1</sup> 1 48 <sup>f</sup>	6258.84933
2658	06 <sup>4</sup> 0 35 <sup>f</sup>	6122.53582	2718	07 <sup>7</sup> 0 27 <sup>e</sup>	6171.16056	2778	00 <sup>2</sup> 2 37 <sup>e</sup>	6217.25593	2838	09 <sup>3</sup> 0 4 <sup>e</sup>	6258.99300
2659	06 <sup>4</sup> 0 35 <sup>e</sup>	6123.68525	2719	05 <sup>3</sup> 1 19 <sup>e</sup>	6171.72141	2779	04 <sup>4</sup> 0 47 <sup>e</sup>	6218.80762	2839	09 <sup>3</sup> 0 4 <sup>f</sup>	6258.99309
2660	08 <sup>6</sup> 0 17 <sup>e</sup>	6125.36155	2720	05 <sup>3</sup> 1 19 <sup>f</sup>	6171.89533	2780	05 <sup>3</sup> 0 42 <sup>e</sup>	6220.08869	2840	14 <sup>4</sup> 0 10 <sup>f</sup>	6259.60844
2661	08 <sup>6</sup> 0 17 <sup>f</sup>	6125.36155	2721	03 <sup>1</sup> 1 36 <sup>f</sup>	6172.33591	2781	08 <sup>4</sup> 0 20 <sup>f</sup>	6221.27795	2841	14 <sup>4</sup> 0 10 <sup>e</sup>	6259.60846
2662	14 <sup>4</sup> 0 4 <sup>e</sup>	6126.35066	2722	11 <sup>1</sup> 0 38 <sup>e</sup>	6173.00569	2782	08 <sup>4</sup> 0 20 <sup>e</sup>	6221.32518	2842	09 <sup>1</sup> 0 6 <sup>e</sup>	6260.10574
2663	14 <sup>4</sup> 0 4 <sup>f</sup>	6126.35066	2723	05 <sup>5</sup> 1 18 <sup>e</sup>	6173.85272	2783	03 <sup>3</sup> 0 52 <sup>e</sup>	6227.15489	2843	01 <sup>1</sup> 0 61 <sup>e</sup>	6260.11885
2664	11 <sup>1</sup> 1 5 <sup>e</sup>	6127.07841	2724	05 <sup>5</sup> 1 18 <sup>f</sup>	6173.85276	2784	09 <sup>1</sup> 0 4 <sup>e</sup>	6227.23729	2844	07 <sup>1</sup> 0 30 <sup>f</sup>	6260.32810
2665	11 <sup>1</sup> 1 5 <sup>f</sup>	6127.30846	2725	08 <sup>2</sup> 0 20 <sup>f</sup>	6174.08663	2785	09 <sup>1</sup> 0 4 <sup>f</sup>	6228.08528	2845	09 <sup>1</sup> 0 6 <sup>f</sup>	6261.88492
2666	02 <sup>0</sup> 2 19 <sup>e</sup>	6127.47323	2726	13 <sup>1</sup> 0 23 <sup>e</sup>	6178.07458	2786	00 <sup>0</sup> 3 0 <sup>e</sup>	6228.59829	2846	02 <sup>2</sup> 2 21 <sup>f</sup>	6261.93668
2667	10 <sup>0</sup> 1 22 <sup>e</sup>	6130.67207	2727	06 <sup>2</sup> 0 36 <sup>f</sup>	6178.26522	2787	14 <sup>4</sup> 0 9 <sup>e</sup>	6229.99798	2847	03 <sup>1</sup> 1 37 <sup>e</sup>	6261.98330
2668	04 <sup>0</sup> 0 47 <sup>e</sup>	6131.57333	2728	02 <sup>2</sup> 1 42 <sup>e</sup>	6178.55076	2788	14 <sup>4</sup> 0 9 <sup>f</sup>	6229.99798	2848	02 <sup>2</sup> 2 21 <sup>e</sup>	6262.74533
2669	08 <sup>8</sup> 0 15 <sup>e</sup>	6132.87976	2729	08 <sup>6</sup> 0 18 <sup>f</sup>	6179.43102	2789	05 <sup>5</sup> 1 19 <sup>e</sup>	6230.11336	2849	06 <sup>1</sup> 1 2 <sup>e</sup>	6263.35437
2670	08 <sup>8</sup> 0 15 <sup>f</sup>	6132.87976	2730	08 <sup>6</sup> 0 18 <sup>e</sup>	6179.43103	2790	05 <sup>5</sup> 1 19 <sup>f</sup>	6230.11341	2850	10 <sup>0</sup> 1 24 <sup>e</sup>	6267.41733
2671	14 <sup>2</sup> 0 7 <sup>f</sup>	6134.97942	2731	14 <sup>4</sup> 0 7 <sup>e</sup>	6179.65708	2791	06 <sup>4</sup> 0 36 <sup>f</sup>	6230.17056	2851	14 <sup>0</sup> 0 12 <sup>e</sup>	6268.13606
2672	14 <sup>2</sup> 0 7 <sup>e</sup>	6135.01788	2732	14 <sup>4</sup> 0 7 <sup>f</sup>	6179.65708	2792	05 <sup>3</sup> 0 42 <sup>f</sup>	6230.60939	2852	05 <sup>1</sup> 1 21 <sup>f</sup>	6268.17398
2673	02 <sup>2</sup> 0 56 <sup>f</sup>	6135.95741	2733	08 <sup>2</sup> 0 20 <sup>e</sup>	6179.94839	2793	05 <sup>3</sup> 1 20 <sup>e</sup>	6231.09693	2853	03 <sup>1</sup> 2 1 <sup>e</sup>	6270.58190
2674	05 <sup>1</sup> 1 19 <sup>e</sup>	6137.08382	2734	08 <sup>8</sup> 0 16 <sup>e</sup>	6180.72741	2794	01 <sup>1</sup> 2 30 <sup>e</sup>	6231.30845	2854	02 <sup>1</sup> 2 1 <sup>f</sup>	6270.61238
2675	14 <sup>4</sup> 0 5 <sup>e</sup>	6141.15844	2735	08 <sup>8</sup> 0 16 <sup>f</sup>	6180.72741	2795	05 <sup>3</sup> 1 20 <sup>f</sup>	6231.33132	2855	02 <sup>0</sup> 0 57 <sup>e</sup>	6271.68100
2676	14 <sup>4</sup> 0 5 <sup>f</sup>	6141.15844	2736	11 <sup>1</sup> 0 38 <sup>f</sup>	6184.07493	2796	00 <sup>0</sup> 3 1 <sup>e</sup>	6231.49390	2856	00 <sup>0</sup> 3 5 <sup>e</sup>	6272.02989
2677	12 <sup>0</sup> 0 31 <sup>e</sup>	6142.06643	2737	14 <sup>2</sup> 0 9 <sup>f</sup>	6185.39541	2797	08 <sup>8</sup> 0 17 <sup>e</sup>	6231.56141	2857	04 <sup>0</sup> 0 48 <sup>e</sup>	6272.21656
2678	02 <sup>2</sup> 2 19 <sup>f</sup>	6142.07152	2738	14 <sup>2</sup> 0 9 <sup>e</sup>	6185.49584	2798	08 <sup>8</sup> 0 17 <sup>f</sup>	6231.56141	2858	06 <sup>1</sup> 0 3 <sup>e</sup>	6272.30077
2679	02 <sup>2</sup> 2 19 <sup>e</sup>	6142.62642	2739	02 <sup>0</sup> 2 20 <sup>e</sup>	6185.86046	2799	06 <sup>4</sup> 0 36 <sup>e</sup>	6231.58533	2859	02 <sup>0</sup> 1 43 <sup>e</sup>	6273.98185
2680	14 <sup>0</sup> 0 8 <sup>e</sup>	6143.75152	2740	13 <sup>1</sup> 0 23 <sup>f</sup>	6186.54301	2800	14 <sup>0</sup> 0 11 <sup>e</sup>	6232.61962	2860	09 <sup>3</sup> 0 5 <sup>e</sup>	6274.13686
2681	01 <sup>1</sup> 2 29 <sup>e</sup>	6144.17066	2741	04 <sup>2</sup> 0 47 <sup>e</sup>	6187.02031	2801	04 <sup>4</sup> 1 29 <sup>f</sup>	6233.74743	2861	09 <sup>3</sup> 0 5 <sup>f</sup>	6274.13723
2682	13 <sup>3</sup> 0 22 <sup>e</sup>	6144.19973	2742	11 <sup>1</sup> 1 8 <sup>e</sup>	6188.29179	2802	04 <sup>4</sup> 1 29 <sup>e</sup>	6233.80133	2862	00 <sup>0</sup> 1 53 <sup>e</sup>	6274.85431
2683	13 <sup>3</sup> 0 22 <sup>f</sup>	6144.30394	2743	11 <sup>1</sup> 1 8 <sup>f</sup>	6188.84360	2803	07 <sup>1</sup> 0 30 <sup>e</sup>	6235.36862	2863	11 <sup>1</sup> 1 11 <sup>e</sup>	6275.72161
2684	11 <sup>1</sup> 1 6 <sup>e</sup>	6144.56900	2744	04 <sup>2</sup> 1 29 <sup>f</sup>	6189.23462	2804	12 <sup>0</sup> 0 32 <sup>e</sup>	6235.75645	2864	05 <sup>5</sup> 0 42 <sup>e</sup>	6276.37558
2685	11 <sup>1</sup> 1 6 <sup>f</sup>	6144.89101	2745	06 <sup>6</sup> 0 35 <sup>f</sup>	6192.44298	2805	03 <sup>3</sup> 0 52 <sup>f</sup>	6236.27281	2865	03 <sup>1</sup> 2 2 <sup>e</sup>	6276.42583
2686	05 <sup>1</sup> 1 19 <sup>f</sup>	6145.85956	2746	06 <sup>6</sup> 0 35 <sup>e</sup>	6192.44516	2806	08 <sup>6</sup> 0 19 <sup>f</sup>	6236.50051	2866	03 <sup>1</sup> 2 2 <sup>f</sup>	6276.51726
2687	07 <sup>1</sup> 0 29 <sup>e</sup>	6146.75970	2747	05 <sup>1</sup> 0 42 <sup>f</sup>	6192.53564	2807	08 <sup>6</sup> 0 19 <sup>e</sup>	6236.50052	2867	05 <sup>5</sup> 0 42 <sup>f</sup>	6276.53711
2688	04 <sup>4</sup> 1 28 <sup>f</sup>	6148.08815	2748	03 <sup>3</sup> 1 36 <sup>e</sup>	6195.28235	2808	08 <sup>2</sup> 0 21 <sup>f</sup>	6237.16420	2868	11 <sup>1</sup> 1 11 <sup>f</sup>	6276.73249
2689	04 <sup>4</sup> 1 28 <sup>e</sup>	6148.12890	2749	07 <sup>3</sup> 0 29 <sup>e</sup>	6195.75023	2809	00 <sup>0</sup> 3 2 <sup>e</sup>	6237.28504	2869	04 <sup>2</sup> 1 30 <sup>f</sup>	6277.69410
2690	02 <sup>0</sup> 1 42 <sup>e</sup>	6148.63644	2750	04 <sup>2</sup> 1 29 <sup>e</sup>	6195.81466	2810	01 <sup>1</sup> 2 30 <sup>f</sup>	6238.18146	2870	06 <sup>2</sup> 1 2 <sup>f</sup>	6278.42225
2691	06 <sup>0</sup> 0 36 <sup>e</sup>	6148.74194	2751	05 <sup>1</sup> 1 20 <sup>e</sup>	6195.88944	2811	01 <sup>1</sup> 1 48 <sup>e</sup>	6241.72609	2871	06 <sup>2</sup> 1 2 <sup>e</sup>	6278.42285
2692	01 <sup>1</sup> 2 29 <sup>f</sup>	6150.60468	2752	03 <sup>3</sup> 1 36 <sup>f</sup>	6196.94161	2812	09 <sup>1</sup> 0 5 <sup>e</sup>	6242.17945	2872	09 <sup>1</sup> 0 7 <sup>e</sup>	6281.01391
2693	05 <sup>5</sup> 0 41 <sup>e</sup>	6151.53165	2753	10 <sup>0</sup> 1 23 <sup>e</sup>	6197.59635	2813	09 <sup>1</sup> 0 5 <sup>f</sup>	6243.45098	2873	03 <sup>1</sup> 1 37 <sup>f</sup>	6281.26514
2694	05 <sup>5</sup> 0 41 <sup>f</sup>	6151.65851	2754	06 <sup>2</sup> 0 36 <sup>e</sup>	6197.80886	2814	11 <sup>1</sup> 1 10 <sup>e</sup>	6243.66645	2874	08 <sup>0</sup> 0 22 <sup>e</sup>	6281.78171
2695	02 <sup>2</sup> 0 56 <sup>e</sup>	6153.70897	2755	14 <sup>0</sup> 0 10 <sup>e</sup>	6200.04758	2815	08 <sup>2</sup> 0 21 <sup>e</sup>	6243.97448	2875	13 <sup>3</sup> 0 24 <sup>e</sup>	6282.95544
2696	03 <sup>1</sup> 1 36 <sup>e</sup>	6153.88988	2756	07 <sup>3</sup> 0 29 <sup>f</sup>	6200.10670	2816	11 <sup>1</sup> 1 10 <sup>f</sup>	6244.50909	2876	13 <sup>3</sup> 0 24 <sup>f</sup>	6283.12906
2697	08 <sup>0</sup> 0 20 <sup>e</sup>	6154.10273	2757	09 <sup>1</sup> 0 1 <sup>e</sup>	6200.33299	2817	00 <sup>0</sup> 3 3 <sup>e</sup>	6245.97157	2877	14 <sup>2</sup> 0 12 <sup>f</sup>	6283.23140
2698	14 <sup>2</sup> 0 8 <sup>f</sup>	6158.70592	2758	09 <sup>1</sup> 0 1 <sup>f</sup>	6200.41783	2818	09 <sup>3</sup> 0 3 <sup>e</sup>	6246.87845	2878	09 <sup>1</sup> 0 7 <sup>f</sup>	6283.38427
2699	14 <sup>2</sup> 0 8 <sup>e</sup>	6158.76994	2759	03 <sup>1</sup> 0 52 <sup>f</sup>	6200.47540	2819	09 <sup>3</sup> 0 3 <sup>f</sup>	6246.87846	2879	14 <sup>2</sup> 0 12 <sup>e</sup>	6283.53284
2700	14 <sup>4</sup> 0 6 <sup>e</sup>	6158.92733	2760	02 <sup>2</sup> 2 20 <sup>f</sup>	6200.54743	2820	02 <sup>0</sup> 2 21 <sup>e</sup>	6247.14577	2880	06 <sup>1</sup> 0 4 <sup>e</sup>	6284.22606

TABLE XVI. The  $\text{H}^{12}\text{C}^{14}\text{N}$  rovibrational levels in  $\text{cm}^{-1}$ .

<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>
2881	08 <sup>4</sup> 0 21 <sup>f</sup>	6284.60001	2941	05 <sup>1</sup> 0 43 <sup>f</sup>	6319.72595	3001	05 <sup>5</sup> 1 21 <sup>e</sup>	6351.50006	3061	03 <sup>3</sup> 0 53 <sup>f</sup>	6393.20911
2882	08 <sup>4</sup> 0 21 <sup>e</sup>	6284.66940	2942	01 <sup>1</sup> 2 31 <sup>e</sup>	6321.32863	3002	05 <sup>5</sup> 1 21 <sup>f</sup>	6351.50021	3062	02 <sup>2</sup> 2 23 <sup>f</sup>	6393.44898
2883	04 <sup>2</sup> 1 30 <sup>e</sup>	6284.97983	2943	02 <sup>2</sup> 0 57 <sup>e</sup>	6321.56915	3003	06 <sup>2</sup> 1 7 <sup>f</sup>	6352.94700	3063	09 <sup>1</sup> 0 11 <sup>e</sup>	6394.41158
2884	03 <sup>1</sup> 2 3 <sup>e</sup>	6285.19143	2944	14 <sup>2</sup> 0 13 <sup>f</sup>	6321.76185	3004	07 <sup>1</sup> 0 31 <sup>f</sup>	6352.98764	3064	02 <sup>2</sup> 2 23 <sup>e</sup>	6394.58191
2885	03 <sup>1</sup> 2 3 <sup>f</sup>	6285.37429	2945	13 <sup>1</sup> 0 25 <sup>e</sup>	6321.82728	3005	06 <sup>2</sup> 1 7 <sup>e</sup>	6353.02215	3065	09 <sup>3</sup> 0 10 <sup>e</sup>	6395.30834
2886	08 <sup>8</sup> 0 18 <sup>e</sup>	6285.38101	2946	14 <sup>2</sup> 0 13 <sup>e</sup>	6322.17050	3006	12 <sup>2</sup> 0 33 <sup>e</sup>	6354.41752	3066	09 <sup>3</sup> 0 10 <sup>f</sup>	6395.33111
2887	08 <sup>8</sup> 0 18 <sup>f</sup>	6285.38101	2947	05 <sup>1</sup> 1 22 <sup>e</sup>	6322.26115	3007	09 <sup>5</sup> 0 6 <sup>f</sup>	6354.75305	3067	06 <sup>4</sup> 1 7 <sup>e</sup>	6398.04955
2888	07 <sup>3</sup> 0 30 <sup>e</sup>	6285.79277	2948	04 <sup>4</sup> 1 30 <sup>f</sup>	6322.34746	3008	09 <sup>5</sup> 0 6 <sup>e</sup>	6354.75305	3068	06 <sup>4</sup> 1 7 <sup>f</sup>	6398.04955
2889	11 <sup>1</sup> 0 39 <sup>e</sup>	6286.80249	2949	04 <sup>4</sup> 1 30 <sup>e</sup>	6322.41806	3009	03 <sup>1</sup> 0 53 <sup>f</sup>	6356.24026	3069	13 <sup>1</sup> 0 26 <sup>e</sup>	6398.07352
2890	01 <sup>1</sup> 0 61 <sup>f</sup>	6287.24117	2950	03 <sup>1</sup> 0 53 <sup>e</sup>	6323.47351	3010	13 <sup>3</sup> 0 25 <sup>e</sup>	6356.74657	3070	03 <sup>1</sup> 2 9 <sup>e</sup>	6399.11435
2891	06 <sup>2</sup> 1 3 <sup>f</sup>	6287.36704	2951	03 <sup>3</sup> 2 4 <sup>f</sup>	6325.85483	3011	13 <sup>3</sup> 0 25 <sup>f</sup>	6356.96699	3071	09 <sup>1</sup> 0 11 <sup>f</sup>	6399.95833
2892	06 <sup>2</sup> 1 3 <sup>e</sup>	6287.37004	2952	03 <sup>3</sup> 2 4 <sup>e</sup>	6325.85483	3012	03 <sup>3</sup> 2 6 <sup>e</sup>	6358.12637	3072	09 <sup>5</sup> 0 8 <sup>e</sup>	6400.05683
2893	05 <sup>1</sup> 0 43 <sup>e</sup>	6287.48801	2953	02 <sup>2</sup> 2 22 <sup>f</sup>	6326.23773	3013	03 <sup>3</sup> 2 6 <sup>f</sup>	6358.12642	3073	09 <sup>5</sup> 0 8 <sup>f</sup>	6400.05684
2894	06 <sup>2</sup> 0 37 <sup>f</sup>	6288.08660	2954	07 <sup>1</sup> 0 31 <sup>e</sup>	6326.89291	3014	05 <sup>3</sup> 1 22 <sup>e</sup>	6358.73130	3074	03 <sup>1</sup> 2 9 <sup>f</sup>	6400.48418
2895	00 <sup>0</sup> 0 65 <sup>e</sup>	6288.25361	2955	02 <sup>2</sup> 2 22 <sup>e</sup>	6327.19925	3015	04 <sup>4</sup> 0 48 <sup>f</sup>	6358.87376	3075	06 <sup>2</sup> 0 38 <sup>f</sup>	6400.81395
2896	05 <sup>5</sup> 1 20 <sup>e</sup>	6289.32942	2956	00 <sup>0</sup> 2 38 <sup>e</sup>	6327.42426	3016	00 <sup>0</sup> 3 9 <sup>e</sup>	6358.87727	3076	08 <sup>8</sup> 0 20 <sup>e</sup>	6401.97385
2897	05 <sup>5</sup> 1 20 <sup>f</sup>	6289.32951	2957	14 <sup>4</sup> 0 12 <sup>f</sup>	6327.70738	3017	05 <sup>3</sup> 1 22 <sup>f</sup>	6359.13794	3077	08 <sup>8</sup> 0 20 <sup>f</sup>	6401.97385
2898	00 <sup>0</sup> 3 6 <sup>e</sup>	6289.40106	2958	14 <sup>4</sup> 0 12 <sup>e</sup>	6327.70743	3018	05 <sup>3</sup> 0 43 <sup>f</sup>	6359.33774	3078	01 <sup>1</sup> 1 49 <sup>f</sup>	6402.01380
2899	07 <sup>3</sup> 0 30 <sup>f</sup>	6290.88320	2959	01 <sup>1</sup> 2 31 <sup>f</sup>	6328.65461	3019	06 <sup>4</sup> 1 5 <sup>e</sup>	6359.36560	3079	03 <sup>3</sup> 2 8 <sup>e</sup>	6402.13046
2900	14 <sup>4</sup> 0 11 <sup>f</sup>	6292.17839	2960	03 <sup>1</sup> 2 6 <sup>e</sup>	6329.01451	3020	06 <sup>4</sup> 1 5 <sup>f</sup>	6359.36560	3080	03 <sup>3</sup> 2 8 <sup>f</sup>	6402.13073
2901	14 <sup>4</sup> 0 11 <sup>e</sup>	6292.17842	2961	04 <sup>2</sup> 0 48 <sup>e</sup>	6329.46772	3021	08 <sup>6</sup> 0 21 <sup>f</sup>	6359.63705	3081	02 <sup>0</sup> 1 44 <sup>e</sup>	6402.19122
2902	09 <sup>3</sup> 0 6 <sup>e</sup>	6292.31040	2962	03 <sup>1</sup> 2 6 <sup>f</sup>	6329.65426	3022	08 <sup>6</sup> 0 21 <sup>e</sup>	6359.63708	3082	05 <sup>1</sup> 1 23 <sup>f</sup>	6402.26846
2903	09 <sup>3</sup> 0 6 <sup>f</sup>	6292.31152	2963	13 <sup>1</sup> 0 25 <sup>f</sup>	6331.72472	3023	04 <sup>4</sup> 0 48 <sup>e</sup>	6361.34451	3083	11 <sup>1</sup> 0 40 <sup>e</sup>	6403.48056
2904	05 <sup>3</sup> 1 21 <sup>e</sup>	6293.43408	2964	09 <sup>1</sup> 0 9 <sup>e</sup>	6331.76556	3024	09 <sup>1</sup> 0 10 <sup>e</sup>	6361.60332	3084	06 <sup>2</sup> 1 9 <sup>f</sup>	6403.60410
2905	05 <sup>3</sup> 1 21 <sup>f</sup>	6293.74505	2965	06 <sup>2</sup> 1 6 <sup>f</sup>	6332.08355	3025	06 <sup>0</sup> 1 8 <sup>e</sup>	6361.65102	3085	06 <sup>2</sup> 1 9 <sup>e</sup>	6403.79964
2906	02 <sup>2</sup> 1 43 <sup>f</sup>	6296.16768	2966	06 <sup>2</sup> 1 6 <sup>e</sup>	6332.12537	3026	14 <sup>2</sup> 0 14 <sup>f</sup>	6363.24922	3086	05 <sup>5</sup> 0 43 <sup>e</sup>	6404.16542
2907	08 <sup>6</sup> 0 20 <sup>f</sup>	6296.56940	2967	12 <sup>0</sup> 0 33 <sup>e</sup>	6332.33791	3027	14 <sup>2</sup> 0 14 <sup>e</sup>	6363.79014	3087	05 <sup>5</sup> 0 43 <sup>f</sup>	6404.36976
2908	08 <sup>6</sup> 0 20 <sup>e</sup>	6296.56941	2968	00 <sup>0</sup> 3 8 <sup>e</sup>	6332.82527	3028	09 <sup>3</sup> 0 9 <sup>e</sup>	6365.01275	3088	14 <sup>4</sup> 0 14 <sup>f</sup>	6407.64048
2909	03 <sup>1</sup> 2 4 <sup>e</sup>	6296.87839	2969	05 <sup>1</sup> 1 22 <sup>f</sup>	6333.75156	3029	09 <sup>3</sup> 0 9 <sup>f</sup>	6365.02502	3089	14 <sup>4</sup> 0 14 <sup>e</sup>	6407.64066
2910	03 <sup>1</sup> 2 4 <sup>f</sup>	6297.18312	2970	09 <sup>1</sup> 0 9 <sup>f</sup>	6335.56505	3030	14 <sup>4</sup> 0 13 <sup>f</sup>	6366.19491	3090	14 <sup>2</sup> 0 15 <sup>f</sup>	6407.69198
2911	11 <sup>1</sup> 0 39 <sup>f</sup>	6298.44333	2971	09 <sup>5</sup> 0 5 <sup>f</sup>	6336.63127	3031	14 <sup>4</sup> 0 13 <sup>e</sup>	6366.19501	3091	14 <sup>2</sup> 0 15 <sup>e</sup>	6408.39308
2912	06 <sup>0</sup> 1 5 <sup>e</sup>	6299.12748	2972	09 <sup>5</sup> 0 5 <sup>e</sup>	6336.63127	3032	09 <sup>1</sup> 0 10 <sup>f</sup>	6366.23776	3092	13 <sup>1</sup> 0 26 <sup>f</sup>	6408.71616
2913	06 <sup>2</sup> 1 4 <sup>f</sup>	6299.29266	2973	10 <sup>0</sup> 0 45 <sup>e</sup>	6337.48618	3033	04 <sup>2</sup> 1 31 <sup>f</sup>	6369.06883	3093	06 <sup>6</sup> 0 37 <sup>f</sup>	6409.89730
2914	06 <sup>2</sup> 1 4 <sup>e</sup>	6299.30163	2974	09 <sup>3</sup> 0 8 <sup>e</sup>	6337.74803	3034	06 <sup>0</sup> 0 38 <sup>e</sup>	6369.52712	3094	06 <sup>6</sup> 0 37 <sup>e</sup>	6409.90163
2915	06 <sup>0</sup> 0 36 <sup>f</sup>	6299.68994	2975	09 <sup>3</sup> 0 8 <sup>f</sup>	6337.75416	3035	08 <sup>2</sup> 0 23 <sup>f</sup>	6372.21670	3095	04 <sup>4</sup> 1 31 <sup>f</sup>	6413.88678
2916	06 <sup>0</sup> 0 36 <sup>e</sup>	6299.69303	2976	06 <sup>0</sup> 1 7 <sup>e</sup>	6337.84434	3036	03 <sup>1</sup> 2 8 <sup>e</sup>	6372.82936	3096	04 <sup>4</sup> 1 31 <sup>e</sup>	6413.97839
2917	02 <sup>2</sup> 0 57 <sup>f</sup>	6303.01801	2977	10 <sup>0</sup> 1 25 <sup>e</sup>	6340.13338	3037	03 <sup>1</sup> 1 38 <sup>e</sup>	6372.95915	3097	01 <sup>1</sup> 2 32 <sup>e</sup>	6414.22902
2918	08 <sup>2</sup> 0 22 <sup>f</sup>	6303.20908	2978	03 <sup>3</sup> 2 5 <sup>e</sup>	6340.52391	3038	03 <sup>1</sup> 2 8 <sup>f</sup>	6373.92558	3098	11 <sup>1</sup> 0 40 <sup>f</sup>	6415.70656
2919	03 <sup>3</sup> 1 37 <sup>e</sup>	6304.17706	2979	03 <sup>3</sup> 2 5 <sup>f</sup>	6340.52392	3039	09 <sup>5</sup> 0 7 <sup>f</sup>	6375.89494	3099	04 <sup>0</sup> 0 49 <sup>e</sup>	6415.72649
2920	09 <sup>1</sup> 0 8 <sup>e</sup>	6304.90144	2980	06 <sup>4</sup> 0 37 <sup>f</sup>	6340.76898	3040	09 <sup>5</sup> 0 7 <sup>e</sup>	6375.89494	3100	10 <sup>0</sup> 1 26 <sup>e</sup>	6415.74275
2921	02 <sup>2</sup> 1 43 <sup>e</sup>	6304.98901	2981	07 <sup>7</sup> 0 29 <sup>e</sup>	6341.30107	3041	06 <sup>2</sup> 1 8 <sup>f</sup>	6376.78763	3101	03 <sup>3</sup> 1 38 <sup>e</sup>	6415.98340
2922	04 <sup>2</sup> 0 48 <sup>f</sup>	6305.47765	2982	07 <sup>7</sup> 0 29 <sup>f</sup>	6341.30108	3042	06 <sup>2</sup> 1 8 <sup>e</sup>	6376.91254	3102	05 <sup>5</sup> 1 22 <sup>e</sup>	6416.62438
2923	03 <sup>3</sup> 1 37 <sup>f</sup>	6306.09401	2983	08 <sup>8</sup> 0 19 <sup>e</sup>	6342.18543	3043	04 <sup>2</sup> 1 31 <sup>e</sup>	6377.09433	3103	05 <sup>5</sup> 1 22 <sup>f</sup>	6416.62463
2924	14 <sup>0</sup> 0 13 <sup>e</sup>	6306.59297	2984	08 <sup>8</sup> 0 19 <sup>f</sup>	6342.18543	3044	06 <sup>4</sup> 1 6 <sup>e</sup>	6377.21990	3104	05 <sup>1</sup> 0 44 <sup>e</sup>	6416.64206
2925	09 <sup>1</sup> 0 8 <sup>f</sup>	6307.94565	2985	06 <sup>4</sup> 0 37 <sup>e</sup>	6342.49544	3045	06 <sup>4</sup> 1 6 <sup>f</sup>	6377.21990	3105	06 <sup>0</sup> 1 10 <sup>e</sup>	6418.13510
2926	06 <sup>2</sup> 0 37 <sup>e</sup>	6308.85059	2986	07 <sup>5</sup> 0 30 <sup>e</sup>	6344.20274	3046	02 <sup>0</sup> 2 23 <sup>e</sup>	6378.40053	3106	03 <sup>3</sup> 1 38 <sup>f</sup>	6418.18717
2927	00 <sup>0</sup> 3 7 <sup>e</sup>	6309.66635	2987	07 <sup>5</sup> 0 30 <sup>f</sup>	6344.23829	3047	03 <sup>3</sup> 2 7 <sup>e</sup>	6378.66198	3107	00 <sup>0</sup> 3 11 <sup>e</sup>	6419.65789
2928	11 <sup>1</sup> 1 12 <sup>e</sup>	6310.68765	2988	06 <sup>4</sup> 1 4 <sup>e</sup>	6344.48680	3048	03 <sup>3</sup> 2 7 <sup>f</sup>	6378.66210	3108	08 <sup>4</sup> 0 23 <sup>f</sup>	6420.28322
2929	08 <sup>2</sup> 0 22 <sup>e</sup>	6311.03850	2989	06 <sup>4</sup> 1 4 <sup>f</sup>	6344.48680	3049	07 <sup>3</sup> 0 31 <sup>e</sup>	6378.77875	3109	08 <sup>4</sup> 0 23 <sup>e</sup>	6420.42368
2930	02 <sup>0</sup> 2 22 <sup>e</sup>	6311.32663	2990	05 <sup>3</sup> 0 43 <sup>e</sup>	6347.82822	3050	08 <sup>2</sup> 0 23 <sup>e</sup>	6381.13224	3110	08 <sup>0</sup> 0 24 <sup>e</sup>	6421.15137
2931	03 <sup>1</sup> 2 5 <sup>e</sup>	6311.48627	2991	14 <sup>0</sup> 0 14 <sup>e</sup>	6347.98637	3051	03 <sup>3</sup> 0 53 <sup>e</sup>	6383.39042	3111	07 <sup>1</sup> 0 32 <sup>e</sup>	6421.33005
2932	11 <sup>1</sup> 1 12 <sup>f</sup>	6311.88196	2992	04 <sup>0</sup> 1 31 <sup>e</sup>	6348.13152	3052	01 <sup>1</sup> 1 49 <sup>e</sup>	6384.19683	3112	06 <sup>4</sup> 1 8 <sup>f</sup>	6421.85438
2933	03 <sup>1</sup> 2 5 <sup>f</sup>	6311.94331	2993	11 <sup>1</sup> 1 13 <sup>e</sup>	6348.56374	3053	07 <sup>3</sup> 0 31 <sup>f</sup>	6384.69616	3113	06 <sup>4</sup> 1 8 <sup>e</sup>	6421.85439
2934	09 <sup>3</sup> 0 7 <sup>e</sup>	6313.51401	2994	03 <sup>1</sup> 2 7 <sup>e</sup>	6349.46246	3054	00 <sup>0</sup> 3 10 <sup>e</sup>	6387.82171	3114	01 <sup>1</sup> 2 32 <sup>f</sup>	6422.02191
2935	09 <sup>3</sup> 0 7 <sup>f</sup>	6313.51679	2995	11 <sup>1</sup> 1 13 <sup>f</sup>	6349.95664	3055	06 <sup>0</sup> 1 9 <sup>e</sup>	6388.41647	3115	06 <sup>2</sup> 0 38 <sup>e</sup>	6422.79933
2936	03 <sup>3</sup> 2 3 <sup>f</sup>	6314.11933	2996	08 <sup>0</sup> 0 23 <sup>e</sup>	6350.00566	3056	11 <sup>1</sup> 1 14 <sup>e</sup>	6389.34897	3116	02 <sup>1</sup> 1 44 <sup>f</sup>	6424.91104
2937	03 <sup>3</sup> 2 3 <sup>e</sup>	6314.11933	2997	03 <sup>1</sup> 2 7 <sup>f</sup>	6350.31529	3057	05 <sup>1</sup> 1 23 <sup>e</sup>	6389.82255	3117	08 <sup>6</sup> 0 22 <sup>f</sup>	6425.70281
2938	06 <sup>2</sup> 1 5 <sup>f</sup>	6314.19844	2998	12 <sup>2</sup> 0 33 <sup>f</sup>	6350.39094	3058	11 <sup>1</sup> 1 14 <sup>f</sup>	6390.95558	3118	08 <sup>6</sup> 0 22 <sup>e</sup>	6425.70286
2939	06 <sup>2</sup> 1 5 <sup>e</sup>	6314.21937	2999	08 <sup>4</sup> 0 22 <sup>f</sup>	6350.93538	3059	14 <sup>0</sup> 0 15 <sup>e</sup>	6392.31225	3119	05 <sup>3</sup> 1 23 <sup>e</sup>	6426.98688
2940	06 <sup>0</sup> 1 6 <sup>e</sup>	6317.00160	3000	08 <sup>4</sup> 0 22 <sup>e</sup>	6351.03543	3060	03 <sup>1</sup> 1 38 <sup>f</sup>	6393.07629	3120	09 <sup>5</sup> 0 9 <sup>f</sup>	6427.23865

TABLE XVII. The  $\text{H}^{12}\text{C}^{14}\text{N}$  rovibrational levels in  $\text{cm}^{-1}$ .

<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>
3121	09 <sup>5</sup> 0 9 <sup>e</sup>	6427.23865	3181	09 <sup>3</sup> 0 12 <sup>e</sup>	6464.99199	3241	09 <sup>3</sup> 0 13 <sup>f</sup>	6504.48496	3301	06 <sup>2</sup> 0 39 <sup>e</sup>	6539.64430
3122	05 <sup>3</sup> 1 23 <sup>f</sup>	6427.51151	3182	09 <sup>3</sup> 0 12 <sup>f</sup>	6465.05817	3242	14 <sup>2</sup> 0 17 <sup>f</sup>	6505.43691	3302	06 <sup>2</sup> 1 13 <sup>f</sup>	6540.59596
3123	03 <sup>1</sup> 2 10 <sup>e</sup>	6428.31647	3183	06 <sup>2</sup> 1 11 <sup>f</sup>	6466.15842	3243	14 <sup>2</sup> 0 17 <sup>e</sup>	6506.55276	3303	06 <sup>2</sup> 1 13 <sup>e</sup>	6541.37853
3124	03 <sup>3</sup> 2 9 <sup>e</sup>	6428.53148	3184	06 <sup>2</sup> 1 11 <sup>e</sup>	6466.57683	3244	04 <sup>4</sup> 0 49 <sup>e</sup>	6506.83466	3304	03 <sup>3</sup> 0 54 <sup>e</sup>	6542.50630
3125	03 <sup>3</sup> 2 9 <sup>f</sup>	6428.53201	3185	01 <sup>1</sup> 0 62 <sup>f</sup>	6468.58888	3245	03 <sup>1</sup> 1 39 <sup>f</sup>	6507.76551	3305	14 <sup>0</sup> 0 18 <sup>e</sup>	6542.84665
3126	09 <sup>3</sup> 0 11 <sup>e</sup>	6428.63481	3186	09 <sup>1</sup> 0 13 <sup>e</sup>	6468.92661	3246	04 <sup>4</sup> 1 32 <sup>f</sup>	6508.36383	3306	09 <sup>3</sup> 0 14 <sup>e</sup>	6546.79639
3127	09 <sup>3</sup> 0 11 <sup>f</sup>	6428.67461	3187	09 <sup>7</sup> 0 7 <sup>f</sup>	6469.26565	3247	04 <sup>4</sup> 1 32 <sup>e</sup>	6508.48170	3307	06 <sup>4</sup> 1 12 <sup>f</sup>	6546.82136
3128	03 <sup>1</sup> 2 10 <sup>f</sup>	6429.99004	3188	09 <sup>7</sup> 0 7 <sup>e</sup>	6469.26565	3248	01 <sup>1</sup> 2 33 <sup>e</sup>	6510.00737	3308	06 <sup>4</sup> 1 12 <sup>e</sup>	6546.82161
3129	09 <sup>1</sup> 0 12 <sup>e</sup>	6430.18711	3189	10 <sup>0</sup> 0 46 <sup>e</sup>	6471.40438	3249	09 <sup>1</sup> 0 14 <sup>e</sup>	6510.62674	3309	09 <sup>3</sup> 0 14 <sup>f</sup>	6546.95876
3130	07 <sup>7</sup> 0 30 <sup>e</sup>	6430.82998	3190	04 <sup>2</sup> 1 32 <sup>e</sup>	6472.15360	3250	06 <sup>4</sup> 1 11 <sup>f</sup>	6511.11794	3310	07 <sup>1</sup> 0 33 <sup>f</sup>	6546.99394
3131	07 <sup>7</sup> 0 30 <sup>f</sup>	6430.83000	3191	02 <sup>2</sup> 0 58 <sup>f</sup>	6472.92960	3251	06 <sup>4</sup> 1 11 <sup>e</sup>	6511.11807	3311	01 <sup>1</sup> 1 50 <sup>f</sup>	6548.04069
3132	00 <sup>0</sup> 1 54 <sup>e</sup>	6431.58530	3192	06 <sup>6</sup> 1 7 <sup>e</sup>	6473.02873	3252	13 <sup>3</sup> 0 27 <sup>e</sup>	6513.14798	3312	05 <sup>1</sup> 1 25 <sup>f</sup>	6548.09609
3133	12 <sup>0</sup> 0 34 <sup>e</sup>	6431.80862	3193	06 <sup>6</sup> 1 7 <sup>f</sup>	6473.02873	3253	13 <sup>3</sup> 0 27 <sup>f</sup>	6513.49287	3313	05 <sup>1</sup> 0 45 <sup>e</sup>	6548.67479
3134	11 <sup>1</sup> 1 15 <sup>e</sup>	6433.04235	3194	05 <sup>1</sup> 1 24 <sup>f</sup>	6473.71869	3254	03 <sup>1</sup> 0 54 <sup>f</sup>	6514.85790	3314	20 <sup>0</sup> 0 4 <sup>e</sup>	6548.75078
3135	06 <sup>2</sup> 1 10 <sup>f</sup>	6433.39492	3195	07 <sup>3</sup> 0 32 <sup>e</sup>	6474.72291	3255	06 <sup>2</sup> 0 39 <sup>f</sup>	6516.44360	3315	14 <sup>4</sup> 0 17 <sup>f</sup>	6549.71949
3136	13 <sup>3</sup> 0 26 <sup>e</sup>	6433.47794	3196	04 <sup>2</sup> 0 49 <sup>e</sup>	6474.78317	3256	01 <sup>1</sup> 2 33 <sup>f</sup>	6518.28105	3316	14 <sup>4</sup> 0 17 <sup>e</sup>	6549.72032
3137	06 <sup>2</sup> 1 10 <sup>e</sup>	6433.68666	3197	09 <sup>1</sup> 0 13 <sup>f</sup>	6476.51711	3257	07 <sup>1</sup> 0 33 <sup>e</sup>	6518.67747	3317	09 <sup>7</sup> 0 10 <sup>f</sup>	6550.47724
3138	13 <sup>3</sup> 0 26 <sup>f</sup>	6433.75497	3198	13 <sup>1</sup> 0 27 <sup>e</sup>	6477.23009	3258	08 <sup>2</sup> 0 25 <sup>f</sup>	6519.10167	3318	09 <sup>7</sup> 0 10 <sup>e</sup>	6550.47724
3139	02 <sup>2</sup> 1 44 <sup>e</sup>	6434.32608	3199	06 <sup>4</sup> 1 10 <sup>f</sup>	6478.38880	3259	09 <sup>1</sup> 0 14 <sup>f</sup>	6519.34012	3319	12 <sup>2</sup> 0 35 <sup>f</sup>	6552.95482
3140	11 <sup>1</sup> 1 15 <sup>f</sup>	6434.87777	3200	06 <sup>4</sup> 1 10 <sup>e</sup>	6478.38886	3260	20 <sup>0</sup> 0 0 <sup>e</sup>	6519.61045	3320	03 <sup>3</sup> 0 54 <sup>f</sup>	6553.04889
3141	09 <sup>1</sup> 0 12 <sup>f</sup>	6436.72049	3201	05 <sup>3</sup> 0 44 <sup>e</sup>	6478.47661	3261	09 <sup>7</sup> 0 9 <sup>f</sup>	6520.39990	3321	06 <sup>6</sup> 1 10 <sup>e</sup>	6553.11742
3142	07 <sup>5</sup> 0 31 <sup>e</sup>	6437.11898	3202	11 <sup>1</sup> 1 16 <sup>e</sup>	6479.64284	3262	09 <sup>7</sup> 0 9 <sup>e</sup>	6520.39990	3322	06 <sup>6</sup> 1 10 <sup>f</sup>	6553.11742
3143	07 <sup>5</sup> 0 31 <sup>f</sup>	6437.16836	3203	00 <sup>0</sup> 0 66 <sup>e</sup>	6480.05450	3263	02 <sup>2</sup> 0 25 <sup>e</sup>	6521.21763	3323	09 <sup>1</sup> 0 15 <sup>e</sup>	6555.28418
3144	14 <sup>0</sup> 0 16 <sup>e</sup>	6439.56673	3204	03 <sup>1</sup> 0 54 <sup>e</sup>	6481.26539	3264	20 <sup>0</sup> 0 1 <sup>e</sup>	6522.52459	3324	05 <sup>5</sup> 1 24 <sup>e</sup>	6555.73035
3145	00 <sup>0</sup> 2 39 <sup>e</sup>	6440.45681	3205	07 <sup>3</sup> 0 32 <sup>f</sup>	6481.53934	3265	11 <sup>1</sup> 0 41 <sup>e</sup>	6523.03714	3325	05 <sup>5</sup> 1 24 <sup>f</sup>	6555.73094
3146	01 <sup>1</sup> 0 62 <sup>e</sup>	6440.61536	3206	11 <sup>1</sup> 1 16 <sup>f</sup>	6481.72212	3266	06 <sup>6</sup> 0 38 <sup>f</sup>	6523.06362	3326	00 <sup>0</sup> 2 40 <sup>e</sup>	6556.35087
3147	02 <sup>0</sup> 0 58 <sup>e</sup>	6440.84995	3207	06 <sup>0</sup> 0 39 <sup>e</sup>	6484.25973	3267	06 <sup>6</sup> 0 38 <sup>e</sup>	6523.06964	3327	02 <sup>2</sup> 1 45 <sup>f</sup>	6556.53213
3148	04 <sup>0</sup> 1 32 <sup>e</sup>	6441.83832	3208	05 <sup>5</sup> 1 23 <sup>e</sup>	6484.70147	3268	07 <sup>7</sup> 0 31 <sup>e</sup>	6523.32970	3328	12 <sup>2</sup> 0 35 <sup>e</sup>	6557.81812
3149	08 <sup>2</sup> 0 24 <sup>f</sup>	6444.18244	3209	05 <sup>5</sup> 1 23 <sup>f</sup>	6484.70185	3269	07 <sup>7</sup> 0 31 <sup>f</sup>	6523.32973	3329	14 <sup>2</sup> 0 18 <sup>f</sup>	6558.73545
3150	02 <sup>0</sup> 2 24 <sup>e</sup>	6448.36501	3210	06 <sup>0</sup> 1 12 <sup>e</sup>	6486.40836	3270	06 <sup>6</sup> 1 9 <sup>e</sup>	6523.45622	3330	13 <sup>1</sup> 0 28 <sup>e</sup>	6559.29474
3151	07 <sup>1</sup> 0 32 <sup>f</sup>	6448.54358	3211	03 <sup>1</sup> 1 39 <sup>e</sup>	6486.81725	3271	06 <sup>6</sup> 1 9 <sup>f</sup>	6523.45622	3331	14 <sup>2</sup> 0 18 <sup>e</sup>	6560.11049
3152	06 <sup>4</sup> 1 9 <sup>f</sup>	6448.63420	3212	13 <sup>1</sup> 0 27 <sup>f</sup>	6488.63634	3272	06 <sup>0</sup> 1 13 <sup>e</sup>	6524.95114	3332	04 <sup>2</sup> 1 33 <sup>f</sup>	6560.55155
3153	06 <sup>4</sup> 1 9 <sup>e</sup>	6448.63423	3213	14 <sup>0</sup> 0 17 <sup>e</sup>	6489.74604	3273	03 <sup>3</sup> 2 12 <sup>e</sup>	6525.32579	3333	04 <sup>0</sup> 0 50 <sup>e</sup>	6562.09972
3154	04 <sup>2</sup> 0 49 <sup>f</sup>	6449.79228	3214	03 <sup>3</sup> 2 11 <sup>e</sup>	6490.12959	3274	03 <sup>3</sup> 2 12 <sup>f</sup>	6525.32866	3334	20 <sup>0</sup> 0 5 <sup>e</sup>	6563.32009
3155	05 <sup>1</sup> 0 44 <sup>f</sup>	6449.79309	3215	03 <sup>3</sup> 2 11 <sup>f</sup>	6490.13131	3275	09 <sup>5</sup> 0 12 <sup>e</sup>	6526.90240	3335	03 <sup>3</sup> 2 13 <sup>e</sup>	6563.45272
3156	12 <sup>2</sup> 0 34 <sup>f</sup>	6450.21931	3216	09 <sup>5</sup> 0 11 <sup>e</sup>	6490.66155	3276	09 <sup>5</sup> 0 12 <sup>f</sup>	6526.90241	3336	03 <sup>3</sup> 2 13 <sup>f</sup>	6563.45732
3157	06 <sup>0</sup> 1 11 <sup>e</sup>	6450.80106	3217	09 <sup>5</sup> 0 11 <sup>f</sup>	6490.66156	3277	20 <sup>0</sup> 0 2 <sup>e</sup>	6528.35279	3337	09 <sup>1</sup> 0 15 <sup>f</sup>	6565.18056
3158	14 <sup>4</sup> 0 15 <sup>f</sup>	6452.04351	3218	05 <sup>3</sup> 0 44 <sup>f</sup>	6491.01091	3278	11 <sup>1</sup> 1 17 <sup>e</sup>	6529.14931	3338	09 <sup>5</sup> 0 13 <sup>e</sup>	6566.16265
3159	14 <sup>4</sup> 0 15 <sup>e</sup>	6452.04381	3219	00 <sup>0</sup> 3 13 <sup>e</sup>	6492.00230	3279	01 <sup>1</sup> 1 50 <sup>e</sup>	6529.51739	3339	09 <sup>5</sup> 0 13 <sup>f</sup>	6566.16269
3160	06 <sup>6</sup> 1 6 <sup>e</sup>	6452.26321	3220	02 <sup>2</sup> 0 58 <sup>e</sup>	6492.29445	3280	08 <sup>2</sup> 0 25 <sup>e</sup>	6530.37116	3340	06 <sup>0</sup> 1 14 <sup>e</sup>	6566.42373
3161	06 <sup>6</sup> 1 6 <sup>f</sup>	6452.26321	3221	08 <sup>4</sup> 0 24 <sup>f</sup>	6492.64152	3281	08 <sup>8</sup> 0 22 <sup>e</sup>	6530.49917	3341	02 <sup>2</sup> 1 45 <sup>e</sup>	6566.55845
3162	08 <sup>2</sup> 0 24 <sup>e</sup>	6454.24686	3222	08 <sup>4</sup> 0 24 <sup>e</sup>	6492.83818	3282	08 <sup>8</sup> 0 22 <sup>f</sup>	6530.49917	3342	08 <sup>6</sup> 0 24 <sup>f</sup>	6566.82582
3163	06 <sup>4</sup> 0 38 <sup>f</sup>	6454.32764	3223	09 <sup>7</sup> 0 8 <sup>f</sup>	6493.32926	3283	03 <sup>3</sup> 1 39 <sup>e</sup>	6530.70019	3343	08 <sup>6</sup> 0 24 <sup>e</sup>	6566.82599
3164	00 <sup>0</sup> 3 12 <sup>e</sup>	6454.38503	3224	09 <sup>7</sup> 0 8 <sup>e</sup>	6493.32926	3284	11 <sup>1</sup> 1 17 <sup>f</sup>	6531.48749	3344	08 <sup>4</sup> 0 25 <sup>f</sup>	6568.01047
3165	12 <sup>2</sup> 0 34 <sup>e</sup>	6454.65363	3225	10 <sup>0</sup> 1 27 <sup>e</sup>	6494.24365	3285	00 <sup>0</sup> 3 14 <sup>e</sup>	6532.50877	3345	08 <sup>4</sup> 0 25 <sup>e</sup>	6568.28025
3166	14 <sup>2</sup> 0 16 <sup>f</sup>	6455.08847	3226	08 <sup>6</sup> 0 23 <sup>f</sup>	6494.76597	3286	07 <sup>5</sup> 0 32 <sup>e</sup>	6533.02211	3346	04 <sup>2</sup> 1 33 <sup>e</sup>	6570.15289
3167	14 <sup>2</sup> 0 16 <sup>e</sup>	6455.98039	3227	08 <sup>6</sup> 0 23 <sup>e</sup>	6494.76607	3287	07 <sup>5</sup> 0 32 <sup>f</sup>	6533.08994	3347	06 <sup>4</sup> 0 39 <sup>f</sup>	6570.84286
3168	06 <sup>4</sup> 0 38 <sup>e</sup>	6456.41670	3228	08 <sup>0</sup> 0 25 <sup>e</sup>	6495.21782	3288	03 <sup>3</sup> 1 39 <sup>f</sup>	6533.21927	3348	13 <sup>1</sup> 0 28 <sup>f</sup>	6571.48133
3169	09 <sup>5</sup> 0 10 <sup>f</sup>	6457.44026	3229	03 <sup>1</sup> 2 12 <sup>e</sup>	6495.46771	3289	02 <sup>0</sup> 1 45 <sup>e</sup>	6533.26169	3349	08 <sup>0</sup> 0 26 <sup>e</sup>	6572.20387
3170	09 <sup>5</sup> 0 10 <sup>e</sup>	6457.44026	3230	06 <sup>6</sup> 1 8 <sup>e</sup>	6496.75986	3290	03 <sup>1</sup> 2 13 <sup>e</sup>	6533.41443	3350	05 <sup>3</sup> 1 25 <sup>e</sup>	6572.36538
3171	03 <sup>3</sup> 2 10 <sup>e</sup>	6457.86467	3231	06 <sup>6</sup> 1 8 <sup>f</sup>	6496.75986	3291	05 <sup>1</sup> 1 25 <sup>e</sup>	6533.68456	3351	05 <sup>3</sup> 1 25 <sup>f</sup>	6573.20680
3172	03 <sup>3</sup> 2 10 <sup>f</sup>	6457.86565	3232	03 <sup>1</sup> 2 12 <sup>f</sup>	6497.83859	3292	12 <sup>0</sup> 0 35 <sup>e</sup>	6534.16639	3352	06 <sup>4</sup> 0 39 <sup>e</sup>	6573.34963
3173	05 <sup>1</sup> 1 24 <sup>e</sup>	6460.29782	3233	05 <sup>3</sup> 1 24 <sup>e</sup>	6498.19892	3293	05 <sup>5</sup> 0 44 <sup>e</sup>	6534.89904	3353	07 <sup>3</sup> 0 33 <sup>e</sup>	6573.62163
3174	03 <sup>1</sup> 2 11 <sup>e</sup>	6460.43464	3234	05 <sup>3</sup> 1 24 <sup>f</sup>	6498.86730	3294	05 <sup>5</sup> 0 44 <sup>f</sup>	6535.15594	3354	03 <sup>1</sup> 2 14 <sup>e</sup>	6574.27345
3175	03 <sup>1</sup> 2 11 <sup>f</sup>	6462.44195	3235	14 <sup>4</sup> 0 16 <sup>f</sup>	6499.40339	3295	11 <sup>1</sup> 0 41 <sup>f</sup>	6535.86177	3355	10 <sup>0</sup> 1 28 <sup>e</sup>	6575.63420
3176	04 <sup>2</sup> 1 32 <sup>f</sup>	6463.35571	3236	14 <sup>4</sup> 0 16 <sup>e</sup>	6499.40391	3296	03 <sup>1</sup> 2 13 <sup>f</sup>	6536.17850	3356	00 <sup>0</sup> 3 15 <sup>e</sup>	6575.90347
3177	02 <sup>2</sup> 2 24 <sup>f</sup>	6463.56877	3237	06 <sup>2</sup> 1 12 <sup>f</sup>	6501.89277	3297	02 <sup>2</sup> 2 25 <sup>f</sup>	6536.59535	3357	03 <sup>1</sup> 2 14 <sup>f</sup>	6577.46008
3178	08 <sup>8</sup> 0 21 <sup>e</sup>	6464.74539	3238	06 <sup>2</sup> 1 12 <sup>e</sup>	6502.47322	3298	20 <sup>0</sup> 0 3 <sup>e</sup>	6537.09492	3358	20 <sup>0</sup> 0 6 <sup>e</sup>	6580.80250
3179	08 <sup>8</sup> 0 21 <sup>f</sup>	6464.74539	3239	04 <sup>4</sup> 0 49 <sup>f</sup>	6503.98997	3299	02 <sup>2</sup> 2 25 <sup>e</sup>	6538.12976	3359	07 <sup>3</sup> 0 33 <sup>f</sup>	6581.40555
3180	02 <sup>2</sup> 2 24 <sup>e</sup>	6464.89245	3240	09 <sup>3</sup> 0 13 <sup>e</sup>	6504.37942	3300	04 <sup>0</sup> 1 33 <sup>e</sup>	6538.43353	3360	11 <sup>1</sup> 1 18 <sup>e</sup>	6581.56058

TABLE XVIII. The  $\text{H}^{12}\text{C}^{14}\text{N}$  rovibrational levels in  $\text{cm}^{-1}$ .

<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>
3361	06 <sup>2</sup> 1 14 <sup>f</sup>	6582.26584	3421	05 <sup>1</sup> 1 26 <sup>f</sup>	6625.39441	3481	09 <sup>1</sup> 0 17 <sup>f</sup>	6665.87318	3541	06 <sup>0</sup> 1 17 <sup>e</sup>	6708.37053
3362	05 <sup>1</sup> 0 45 <sup>f</sup>	6582.73486	3422	05 <sup>3</sup> 0 45 <sup>f</sup>	6625.62131	3482	02 <sup>2</sup> 0 59 <sup>e</sup>	6665.88049	3542	01 <sup>1</sup> 2 35 <sup>e</sup>	6710.18862
3363	06 <sup>2</sup> 1 14 <sup>e</sup>	6583.29496	3423	06 <sup>2</sup> 1 15 <sup>f</sup>	6626.90007	3483	02 <sup>0</sup> 1 46 <sup>e</sup>	6667.19032	3543	04 <sup>0</sup> 0 51 <sup>e</sup>	6711.33280
3364	09 <sup>7</sup> 0 11 <sup>f</sup>	6583.56092	3424	06 <sup>4</sup> 1 14 <sup>f</sup>	6627.14985	3484	05 <sup>5</sup> 0 45 <sup>e</sup>	6668.57418	3544	20 <sup>0</sup> 0 11 <sup>e</sup>	6711.89433
3365	09 <sup>7</sup> 0 11 <sup>e</sup>	6583.56092	3425	06 <sup>4</sup> 1 14 <sup>e</sup>	6627.15070	3485	03 <sup>1</sup> 2 16 <sup>f</sup>	6668.84108	3545	15 <sup>1</sup> 0 1 <sup>e</sup>	6712.45044
3366	11 <sup>1</sup> 1 18 <sup>f</sup>	6584.17264	3426	06 <sup>2</sup> 1 15 <sup>e</sup>	6628.22399	3486	05 <sup>5</sup> 0 45 <sup>f</sup>	6668.89519	3546	15 <sup>1</sup> 0 1 <sup>f</sup>	6712.49908
3367	06 <sup>4</sup> 1 13 <sup>f</sup>	6585.49877	3427	05 <sup>5</sup> 1 25 <sup>e</sup>	6629.71003	3487	08 <sup>8</sup> 0 24 <sup>e</sup>	6670.94961	3547	03 <sup>1</sup> 2 17 <sup>e</sup>	6714.30959
3368	06 <sup>4</sup> 1 13 <sup>e</sup>	6585.49924	3428	05 <sup>5</sup> 1 25 <sup>f</sup>	6629.71092	3488	08 <sup>8</sup> 0 24 <sup>f</sup>	6670.94961	3548	03 <sup>3</sup> 0 55 <sup>f</sup>	6715.78730
3369	06 <sup>6</sup> 1 11 <sup>e</sup>	6585.74300	3429	07 <sup>5</sup> 0 33 <sup>e</sup>	6631.91089	3489	04 <sup>2</sup> 1 34 <sup>e</sup>	6671.08724	3549	07 <sup>7</sup> 0 33 <sup>e</sup>	6717.23650
3370	06 <sup>6</sup> 1 11 <sup>f</sup>	6585.74300	3430	07 <sup>5</sup> 0 33 <sup>f</sup>	6632.00311	3490	00 <sup>3</sup> 3 17 <sup>e</sup>	6671.35326	3550	07 <sup>7</sup> 0 33 <sup>f</sup>	6717.23657
3371	00 <sup>0</sup> 1 55 <sup>e</sup>	6591.14942	3431	06 <sup>2</sup> 0 40 <sup>f</sup>	6634.97191	3491	06 <sup>4</sup> 1 15 <sup>f</sup>	6671.77427	3551	15 <sup>1</sup> 0 2 <sup>e</sup>	6718.35590
3372	09 <sup>3</sup> 0 15 <sup>e</sup>	6592.24185	3432	11 <sup>1</sup> 1 19 <sup>e</sup>	6636.87539	3492	06 <sup>4</sup> 1 15 <sup>e</sup>	6671.77574	3552	14 <sup>4</sup> 0 20 <sup>f</sup>	6718.39792
3373	09 <sup>3</sup> 0 15 <sup>f</sup>	6592.48392	3433	04 <sup>0</sup> 1 34 <sup>e</sup>	6637.91515	3493	09 <sup>0</sup> 0 10 <sup>f</sup>	6674.04717	3553	14 <sup>4</sup> 0 20 <sup>e</sup>	6718.40096
3374	13 <sup>3</sup> 0 28 <sup>e</sup>	6595.75502	3434	06 <sup>6</sup> 0 39 <sup>f</sup>	6639.18743	3494	09 <sup>0</sup> 0 10 <sup>e</sup>	6674.04717	3554	15 <sup>1</sup> 0 2 <sup>f</sup>	6718.50182
3375	13 <sup>3</sup> 0 28 <sup>f</sup>	6596.18058	3435	06 <sup>6</sup> 0 39 <sup>e</sup>	6639.19573	3495	14 <sup>2</sup> 0 20 <sup>f</sup>	6674.17477	3555	05 <sup>1</sup> 0 46 <sup>f</sup>	6718.54889
3376	02 <sup>0</sup> 2 26 <sup>e</sup>	6596.95602	3436	12 <sup>0</sup> 0 36 <sup>e</sup>	6639.40897	3496	06 <sup>2</sup> 1 16 <sup>f</sup>	6674.49617	3556	03 <sup>1</sup> 2 17 <sup>f</sup>	6718.93657
3377	08 <sup>2</sup> 0 26 <sup>f</sup>	6596.96977	3437	11 <sup>1</sup> 1 19 <sup>f</sup>	6639.77627	3497	00 <sup>0</sup> 0 67 <sup>e</sup>	6674.65903	3557	06 <sup>4</sup> 1 16 <sup>f</sup>	6719.37164
3378	04 <sup>2</sup> 0 50 <sup>f</sup>	6596.97744	3438	09 <sup>3</sup> 0 16 <sup>e</sup>	6640.71438	3498	00 <sup>2</sup> 2 41 <sup>e</sup>	6675.10366	3558	06 <sup>4</sup> 1 16 <sup>e</sup>	6719.37411
3379	14 <sup>0</sup> 0 19 <sup>e</sup>	6598.86527	3439	09 <sup>3</sup> 0 16 <sup>f</sup>	6641.06536	3499	07 <sup>3</sup> 0 34 <sup>e</sup>	6675.46898	3559	01 <sup>1</sup> 2 35 <sup>f</sup>	6719.46522
3380	08 <sup>8</sup> 0 23 <sup>e</sup>	6599.23423	3440	08 <sup>6</sup> 0 25 <sup>f</sup>	6641.88163	3500	02 <sup>0</sup> 2 27 <sup>e</sup>	6675.57787	3560	14 <sup>0</sup> 0 21 <sup>e</sup>	6719.64485
3381	08 <sup>8</sup> 0 23 <sup>f</sup>	6599.23423	3441	08 <sup>6</sup> 0 25 <sup>e</sup>	6641.88190	3501	06 <sup>2</sup> 1 16 <sup>e</sup>	6676.16635	3561	08 <sup>6</sup> 0 26 <sup>f</sup>	6719.93261
3382	20 <sup>0</sup> 0 7 <sup>e</sup>	6601.19760	3442	03 <sup>1</sup> 0 55 <sup>e</sup>	6641.90461	3502	14 <sup>2</sup> 0 20 <sup>e</sup>	6676.18092	3562	08 <sup>6</sup> 0 26 <sup>e</sup>	6719.93305
3383	06 <sup>0</sup> 0 40 <sup>e</sup>	6601.87800	3443	09 <sup>0</sup> 0 9 <sup>f</sup>	6644.12706	3503	03 <sup>1</sup> 0 55 <sup>f</sup>	6676.32520	3563	09 <sup>1</sup> 0 18 <sup>f</sup>	6720.70315
3384	09 <sup>1</sup> 0 16 <sup>e</sup>	6602.89562	3444	09 <sup>0</sup> 0 9 <sup>e</sup>	6644.12706	3504	01 <sup>1</sup> 1 51 <sup>e</sup>	6677.68428	3564	07 <sup>1</sup> 0 35 <sup>e</sup>	6722.09276
3385	14 <sup>4</sup> 0 18 <sup>f</sup>	6602.99110	3445	13 <sup>1</sup> 0 29 <sup>e</sup>	6644.26516	3505	08 <sup>2</sup> 0 27 <sup>f</sup>	6677.78212	3565	06 <sup>0</sup> 0 41 <sup>e</sup>	6722.35721
3386	14 <sup>4</sup> 0 18 <sup>e</sup>	6602.99241	3446	11 <sup>1</sup> 0 42 <sup>e</sup>	6645.46940	3506	20 <sup>0</sup> 0 10 <sup>e</sup>	6679.85394	3566	03 <sup>1</sup> 1 41 <sup>e</sup>	6723.19775
3387	03 <sup>1</sup> 1 40 <sup>e</sup>	6603.55697	3447	02 <sup>2</sup> 0 59 <sup>f</sup>	6645.68803	3507	13 <sup>3</sup> 0 29 <sup>e</sup>	6681.29730	3567	00 <sup>3</sup> 3 18 <sup>e</sup>	6723.40604
3388	03 <sup>3</sup> 2 14 <sup>e</sup>	6604.50981	3448	08 <sup>4</sup> 0 26 <sup>f</sup>	6646.38853	3508	13 <sup>3</sup> 0 29 <sup>f</sup>	6681.81795	3568	06 <sup>2</sup> 1 17 <sup>f</sup>	6725.05147
3389	03 <sup>3</sup> 2 14 <sup>f</sup>	6604.51693	3449	08 <sup>4</sup> 0 26 <sup>e</sup>	6646.75036	3509	05 <sup>1</sup> 0 46 <sup>e</sup>	6683.58299	3569	06 <sup>2</sup> 1 17 <sup>e</sup>	6727.12183
3390	04 <sup>4</sup> 1 33 <sup>f</sup>	6605.77700	3450	03 <sup>3</sup> 1 40 <sup>e</sup>	6648.32479	3510	07 <sup>3</sup> 0 34 <sup>f</sup>	6684.28676	3570	15 <sup>1</sup> 0 3 <sup>e</sup>	6727.21365
3391	04 <sup>4</sup> 1 33 <sup>e</sup>	6605.92739	3451	07 <sup>1</sup> 0 34 <sup>f</sup>	6648.33711	3511	05 <sup>1</sup> 1 27 <sup>e</sup>	6689.18280	3571	15 <sup>1</sup> 0 3 <sup>f</sup>	6727.50545
3392	10 <sup>0</sup> 0 47 <sup>e</sup>	6608.18377	3452	03 <sup>3</sup> 2 15 <sup>e</sup>	6648.49641	3512	06 <sup>4</sup> 0 40 <sup>f</sup>	6690.31075	3572	08 <sup>4</sup> 0 27 <sup>f</sup>	6727.77089
3393	09 <sup>5</sup> 0 14 <sup>e</sup>	6608.44217	3453	03 <sup>3</sup> 2 15 <sup>f</sup>	6648.50711	3513	02 <sup>2</sup> 1 46 <sup>f</sup>	6691.02771	3573	08 <sup>4</sup> 0 27 <sup>e</sup>	6728.24468
3394	09 <sup>5</sup> 0 14 <sup>f</sup>	6608.44224	3454	05 <sup>3</sup> 1 26 <sup>e</sup>	6649.48401	3514	02 <sup>2</sup> 2 27 <sup>f</sup>	6691.36152	3574	05 <sup>3</sup> 1 27 <sup>e</sup>	6729.55243
3395	01 <sup>1</sup> 2 34 <sup>e</sup>	6608.66137	3455	05 <sup>3</sup> 1 26 <sup>f</sup>	6650.53140	3515	08 <sup>2</sup> 0 27 <sup>e</sup>	6691.62058	3575	05 <sup>3</sup> 1 27 <sup>f</sup>	6730.84226
3396	08 <sup>2</sup> 0 26 <sup>e</sup>	6609.48853	3456	20 <sup>0</sup> 0 9 <sup>e</sup>	6650.72391	3516	09 <sup>3</sup> 0 17 <sup>e</sup>	6692.21219	3576	13 <sup>1</sup> 0 30 <sup>e</sup>	6732.13900
3397	05 <sup>1</sup> 1 26 <sup>e</sup>	6609.98037	3457	03 <sup>3</sup> 1 40 <sup>f</sup>	6651.18816	3517	09 <sup>3</sup> 0 17 <sup>f</sup>	6692.70853	3577	07 <sup>5</sup> 0 34 <sup>e</sup>	6733.78401
3398	06 <sup>0</sup> 1 15 <sup>e</sup>	6610.82089	3458	04 <sup>4</sup> 0 50 <sup>f</sup>	6652.01896	3518	06 <sup>4</sup> 0 40 <sup>e</sup>	6693.29404	3578	07 <sup>5</sup> 0 34 <sup>f</sup>	6733.90814
3399	05 <sup>3</sup> 0 45 <sup>e</sup>	6612.02932	3459	08 <sup>0</sup> 0 27 <sup>e</sup>	6652.10824	3519	02 <sup>2</sup> 2 27 <sup>e</sup>	6693.37945	3579	08 <sup>0</sup> 0 28 <sup>e</sup>	6734.92948
3400	02 <sup>2</sup> 2 26 <sup>f</sup>	6612.52689	3460	01 <sup>1</sup> 0 63 <sup>f</sup>	6652.76788	3520	11 <sup>1</sup> 1 20 <sup>e</sup>	6695.09241	3580	14 <sup>2</sup> 0 21 <sup>f</sup>	6736.31128
3401	02 <sup>0</sup> 0 59 <sup>e</sup>	6612.85243	3461	09 <sup>1</sup> 0 17 <sup>e</sup>	6653.45785	3521	03 <sup>3</sup> 2 16 <sup>e</sup>	6695.41181	3581	14 <sup>2</sup> 0 21 <sup>e</sup>	6738.69183
3402	09 <sup>1</sup> 0 16 <sup>f</sup>	6614.02849	3462	09 <sup>5</sup> 0 15 <sup>e</sup>	6653.74080	3522	03 <sup>3</sup> 2 16 <sup>f</sup>	6695.42747	3582	15 <sup>1</sup> 0 4 <sup>e</sup>	6739.02314
3403	02 <sup>2</sup> 2 26 <sup>e</sup>	6614.29259	3463	09 <sup>5</sup> 0 15 <sup>f</sup>	6653.74093	3523	01 <sup>1</sup> 1 51 <sup>f</sup>	6696.92643	3583	15 <sup>1</sup> 0 4 <sup>f</sup>	6739.50940
3404	14 <sup>2</sup> 0 19 <sup>f</sup>	6614.98209	3464	04 <sup>4</sup> 0 50 <sup>e</sup>	6655.27574	3524	11 <sup>1</sup> 1 20 <sup>f</sup>	6698.29701	3584	04 <sup>0</sup> 1 35 <sup>e</sup>	6740.28109
3405	14 <sup>2</sup> 0 19 <sup>e</sup>	6616.65343	3465	13 <sup>1</sup> 0 29 <sup>f</sup>	6657.24705	3525	09 <sup>7</sup> 0 14 <sup>f</sup>	6700.84589	3585	09 <sup>0</sup> 0 12 <sup>f</sup>	6742.85794
3406	01 <sup>1</sup> 2 34 <sup>f</sup>	6617.42963	3466	14 <sup>0</sup> 0 20 <sup>e</sup>	6657.79891	3526	09 <sup>7</sup> 0 14 <sup>e</sup>	6700.84589	3586	09 <sup>0</sup> 0 12 <sup>e</sup>	6742.85794
3407	03 <sup>1</sup> 2 15 <sup>e</sup>	6618.04335	3467	06 <sup>0</sup> 1 16 <sup>e</sup>	6658.13787	3527	06 <sup>6</sup> 1 14 <sup>e</sup>	6701.40087	3587	03 <sup>3</sup> 2 17 <sup>e</sup>	6745.25524
3408	07 <sup>7</sup> 0 32 <sup>e</sup>	6618.79897	3468	12 <sup>2</sup> 0 36 <sup>f</sup>	6658.59497	3528	06 <sup>6</sup> 1 14 <sup>f</sup>	6701.40087	3588	03 <sup>3</sup> 2 17 <sup>f</sup>	6745.27763
3409	07 <sup>7</sup> 0 32 <sup>f</sup>	6618.79901	3469	09 <sup>7</sup> 0 13 <sup>f</sup>	6658.74569	3529	02 <sup>2</sup> 1 46 <sup>e</sup>	6701.68257	3589	08 <sup>8</sup> 0 25 <sup>e</sup>	6745.64428
3410	07 <sup>1</sup> 0 34 <sup>e</sup>	6618.93258	3470	09 <sup>7</sup> 0 13 <sup>e</sup>	6658.74569	3530	09 <sup>5</sup> 0 16 <sup>e</sup>	6702.05838	3590	08 <sup>8</sup> 0 25 <sup>f</sup>	6745.64428
3411	09 <sup>7</sup> 0 12 <sup>f</sup>	6619.65055	3471	11 <sup>1</sup> 0 42 <sup>f</sup>	6658.90604	3531	09 <sup>5</sup> 0 16 <sup>f</sup>	6702.05863	3591	03 <sup>1</sup> 1 41 <sup>f</sup>	6745.76353
3412	09 <sup>7</sup> 0 12 <sup>e</sup>	6619.65055	3472	14 <sup>4</sup> 0 19 <sup>f</sup>	6659.21751	3532	03 <sup>3</sup> 0 55 <sup>e</sup>	6704.49847	3592	06 <sup>6</sup> 1 15 <sup>e</sup>	6745.87861
3413	06 <sup>6</sup> 1 12 <sup>e</sup>	6621.33246	3473	14 <sup>4</sup> 0 19 <sup>e</sup>	6659.21952	3533	05 <sup>1</sup> 1 27 <sup>f</sup>	6705.60744	3593	06 <sup>6</sup> 1 15 <sup>f</sup>	6745.87861
3414	06 <sup>6</sup> 1 12 <sup>f</sup>	6621.33246	3474	06 <sup>2</sup> 0 40 <sup>e</sup>	6659.37770	3534	04 <sup>4</sup> 1 34 <sup>f</sup>	6706.12457	3594	13 <sup>1</sup> 0 30 <sup>f</sup>	6745.92933
3415	03 <sup>1</sup> 2 15 <sup>f</sup>	6621.68157	3475	06 <sup>6</sup> 1 13 <sup>e</sup>	6659.88528	3535	04 <sup>4</sup> 1 34 <sup>e</sup>	6706.31496	3595	09 <sup>7</sup> 0 15 <sup>f</sup>	6745.95065
3416	00 <sup>0</sup> 3 16 <sup>e</sup>	6622.18534	3476	06 <sup>6</sup> 1 13 <sup>f</sup>	6659.88528	3536	05 <sup>5</sup> 1 26 <sup>e</sup>	6706.63946	3596	09 <sup>7</sup> 0 15 <sup>e</sup>	6745.95065
3417	04 <sup>2</sup> 0 50 <sup>e</sup>	6622.96137	3477	10 <sup>0</sup> 1 29 <sup>e</sup>	6659.91248	3537	05 <sup>5</sup> 1 26 <sup>f</sup>	6706.64078	3597	09 <sup>3</sup> 0 18 <sup>e</sup>	6746.73310
3418	01 <sup>1</sup> 0 63 <sup>e</sup>	6623.93174	3478	04 <sup>2</sup> 1 34 <sup>f</sup>	6660.65313	3538	09 <sup>0</sup> 0 11 <sup>f</sup>	6706.95762	3598	20 <sup>0</sup> 0 12 <sup>e</sup>	6746.84432
3419	20 <sup>0</sup> 0 8 <sup>e</sup>	6624.50492	3479	12 <sup>2</sup> 0 36 <sup>e</sup>	6663.90819	3539	09 <sup>0</sup> 0 11 <sup>e</sup>	6706.95762	3599	04 <sup>2</sup> 0 51 <sup>f</sup>	6747.02938
3420	03 <sup>1</sup> 1 40 <sup>f</sup>	6625.32909	3480	03 <sup>1</sup> 2 16 <sup>e</sup>	6664.72259	3540	09 <sup>1</sup> 0 18 <sup>e</sup>	6706.96772	3600	10 <sup>0</sup> 1 30 <sup>e</sup>	6747.07648

TABLE XIX. The  $\text{H}^{12}\text{C}^{14}\text{N}$  rovibrational levels in  $\text{cm}^{-1}$ .

<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>	<i>Nr.</i>	<i>State</i>	<i>T</i>
3601	09 <sup>3</sup> 0 18 <sup>f</sup>	6747.41918	3661	12 <sup>2</sup> 1 2 <sup>f</sup>	6784.17192	3721	02 <sup>2</sup> 0 60 <sup>f</sup>	6821.28910	3781	12 <sup>2</sup> 1 7 <sup>f</sup>	6857.40932
3602	12 <sup>0</sup> 0 37 <sup>e</sup>	6747.53409	3662	12 <sup>2</sup> 1 2 <sup>e</sup>	6784.17202	3722	05 <sup>1</sup> 0 47 <sup>e</sup>	6821.36338	3782	12 <sup>2</sup> 1 7 <sup>e</sup>	6857.42176
3603	10 <sup>0</sup> 0 48 <sup>e</sup>	6747.82113	3663	14 <sup>0</sup> 0 22 <sup>e</sup>	6784.40064	3723	03 <sup>1</sup> 2 19 <sup>e</sup>	6822.20007	3783	02 <sup>2</sup> 2 29 <sup>f</sup>	6857.73211
3604	05 <sup>3</sup> 0 46 <sup>e</sup>	6748.48178	3664	20 <sup>0</sup> 0 13 <sup>e</sup>	6784.70310	3724	12 <sup>0</sup> 1 6 <sup>e</sup>	6822.25415	3784	010 <sup>0</sup> 0 1 <sup>e</sup>	6858.48603
3605	07 <sup>1</sup> 0 35 <sup>f</sup>	6752.57167	3665	11 <sup>1</sup> 0 43 <sup>f</sup>	6784.83639	3725	15 <sup>3</sup> 0 7 <sup>e</sup>	6822.75346	3785	12 <sup>0</sup> 0 38 <sup>e</sup>	6858.53941
3606	09 <sup>3</sup> 0 17 <sup>e</sup>	6753.39472	3666	05 <sup>5</sup> 1 27 <sup>e</sup>	6786.51756	3726	15 <sup>3</sup> 0 7 <sup>f</sup>	6822.75399	3786	07 <sup>1</sup> 0 36 <sup>f</sup>	6859.69631
3607	09 <sup>5</sup> 0 17 <sup>f</sup>	6753.39519	3667	05 <sup>5</sup> 1 27 <sup>f</sup>	6786.51950	3727	09 <sup>1</sup> 0 20 <sup>e</sup>	6822.81825	3787	02 <sup>2</sup> 2 29 <sup>e</sup>	6860.31845
3608	00 <sup>0</sup> 1 56 <sup>e</sup>	6753.54287	3668	02 <sup>0</sup> 0 60 <sup>e</sup>	6787.68442	3728	13 <sup>1</sup> 0 31 <sup>e</sup>	6822.91387	3788	13 <sup>3</sup> 0 31 <sup>e</sup>	6861.18002
3609	15 <sup>1</sup> 0 5 <sup>e</sup>	6753.78366	3669	05 <sup>1</sup> 1 28 <sup>f</sup>	6788.72906	3729	08 <sup>8</sup> 0 26 <sup>e</sup>	6823.31720	3789	15 <sup>5</sup> 0 6 <sup>f</sup>	6861.67540
3610	15 <sup>1</sup> 0 5 <sup>f</sup>	6754.51291	3670	12 <sup>0</sup> 1 4 <sup>e</sup>	6790.01734	3730	08 <sup>8</sup> 0 26 <sup>f</sup>	6823.31720	3790	15 <sup>5</sup> 0 6 <sup>e</sup>	6861.67540
3611	11 <sup>1</sup> 1 21 <sup>e</sup>	6756.21025	3671	07 <sup>3</sup> 0 35 <sup>f</sup>	6790.17423	3731	06 <sup>4</sup> 1 18 <sup>f</sup>	6823.48359	3791	13 <sup>3</sup> 0 31 <sup>f</sup>	6861.94099
3612	06 <sup>2</sup> 0 41 <sup>f</sup>	6756.39525	3672	15 <sup>1</sup> 0 7 <sup>e</sup>	6792.15415	3732	06 <sup>4</sup> 1 18 <sup>e</sup>	6823.48988	3792	04 <sup>0</sup> 0 52 <sup>e</sup>	6863.42220
3613	02 <sup>0</sup> 2 28 <sup>e</sup>	6757.08089	3673	12 <sup>2</sup> 1 3 <sup>f</sup>	6792.96121	3733	09 <sup>0</sup> 0 14 <sup>f</sup>	6823.62607	3793	010 <sup>0</sup> 0 2 <sup>e</sup>	6864.57014
3614	15 <sup>3</sup> 0 3 <sup>f</sup>	6757.33609	3674	12 <sup>2</sup> 1 3 <sup>e</sup>	6792.96170	3734	09 <sup>0</sup> 0 14 <sup>e</sup>	6823.62607	3794	08 <sup>2</sup> 0 29 <sup>e</sup>	6864.77914
3615	15 <sup>3</sup> 0 3 <sup>e</sup>	6757.33609	3675	06 <sup>6</sup> 1 16 <sup>e</sup>	6793.31783	3735	11 <sup>1</sup> 1 22 <sup>f</sup>	6824.08397	3795	09 <sup>3</sup> 0 20 <sup>e</sup>	6864.83332
3616	06 <sup>6</sup> 0 40 <sup>f</sup>	6758.26721	3676	06 <sup>6</sup> 1 16 <sup>f</sup>	6793.31783	3736	01 <sup>1</sup> 2 36 <sup>f</sup>	6824.38527	3796	09 <sup>5</sup> 0 19 <sup>e</sup>	6865.12301
3617	06 <sup>6</sup> 0 40 <sup>e</sup>	6758.27855	3677	15 <sup>1</sup> 0 7 <sup>f</sup>	6793.51450	3737	20 <sup>0</sup> 0 14 <sup>e</sup>	6825.46976	3797	09 <sup>5</sup> 0 19 <sup>f</sup>	6865.12442
3618	11 <sup>1</sup> 1 21 <sup>f</sup>	6759.73341	3678	09 <sup>7</sup> 0 16 <sup>f</sup>	6794.05945	3738	03 <sup>1</sup> 2 19 <sup>f</sup>	6827.92647	3798	09 <sup>3</sup> 0 20 <sup>f</sup>	6866.06622
3619	12 <sup>0</sup> 1 0 <sup>e</sup>	6760.70513	3679	09 <sup>7</sup> 0 16 <sup>e</sup>	6794.05945	3739	07 <sup>1</sup> 0 36 <sup>e</sup>	6828.15532	3799	12 <sup>0</sup> 1 8 <sup>e</sup>	6866.20223
3620	06 <sup>0</sup> 1 18 <sup>e</sup>	6761.51529	3680	00 <sup>0</sup> 2 42 <sup>e</sup>	6796.71233	3740	02 <sup>2</sup> 1 47 <sup>f</sup>	6828.39447	3800	09 <sup>0</sup> 0 15 <sup>f</sup>	6868.49273
3621	08 <sup>2</sup> 0 28 <sup>f</sup>	6761.53417	3681	03 <sup>3</sup> 2 18 <sup>e</sup>	6798.02586	3741	01 <sup>1</sup> 1 52 <sup>e</sup>	6828.69395	3801	09 <sup>0</sup> 0 15 <sup>e</sup>	6868.49273
3622	05 <sup>3</sup> 0 46 <sup>f</sup>	6763.16116	3682	03 <sup>3</sup> 2 18 <sup>f</sup>	6798.05723	3742	06 <sup>2</sup> 1 19 <sup>f</sup>	6835.02835	3802	03 <sup>1</sup> 1 42 <sup>f</sup>	6869.06544
3623	09 <sup>1</sup> 0 19 <sup>e</sup>	6763.42217	3683	08 <sup>6</sup> 0 27 <sup>f</sup>	6800.97797	3743	00 <sup>3</sup> 2 20 <sup>e</sup>	6836.16103	3803	20 <sup>0</sup> 0 15 <sup>e</sup>	6869.14336
3624	12 <sup>0</sup> 1 1 <sup>e</sup>	6763.63661	3684	08 <sup>6</sup> 0 27 <sup>e</sup>	6800.97868	3744	12 <sup>2</sup> 1 6 <sup>f</sup>	6836.90437	3804	05 <sup>5</sup> 1 28 <sup>e</sup>	6869.34323
3625	04 <sup>2</sup> 1 35 <sup>f</sup>	6763.65716	3685	14 <sup>2</sup> 0 22 <sup>f</sup>	6801.38934	3745	12 <sup>2</sup> 1 6 <sup>e</sup>	6836.91129	3805	05 <sup>5</sup> 1 28 <sup>f</sup>	6869.34603
3626	03 <sup>1</sup> 2 18 <sup>e</sup>	6766.80266	3686	15 <sup>3</sup> 0 6 <sup>e</sup>	6801.93901	3746	10 <sup>0</sup> 1 31 <sup>e</sup>	6837.12412	3806	03 <sup>3</sup> 0 56 <sup>e</sup>	6869.36285
3627	12 <sup>2</sup> 0 37 <sup>f</sup>	6767.13717	3687	15 <sup>3</sup> 0 6 <sup>f</sup>	6801.93922	3747	13 <sup>1</sup> 0 31 <sup>f</sup>	6837.52388	3807	14 <sup>2</sup> 0 23 <sup>f</sup>	6869.40655
3628	03 <sup>3</sup> 1 41 <sup>e</sup>	6768.85405	3688	04 <sup>4</sup> 0 51 <sup>f</sup>	6802.95704	3748	06 <sup>2</sup> 1 19 <sup>e</sup>	6838.06702	3808	04 <sup>2</sup> 1 36 <sup>f</sup>	6869.56031
3629	15 <sup>3</sup> 0 4 <sup>e</sup>	6769.23026	3689	02 <sup>0</sup> 1 47 <sup>e</sup>	6803.97411	3749	07 <sup>0</sup> 0 35 <sup>e</sup>	6838.63999	3809	15 <sup>1</sup> 0 10 <sup>e</sup>	6871.81560
3630	15 <sup>3</sup> 0 4 <sup>f</sup>	6769.23028	3690	14 <sup>2</sup> 0 22 <sup>e</sup>	6804.18455	3750	07 <sup>5</sup> 0 35 <sup>f</sup>	6838.80552	3810	00 <sup>0</sup> 0 68 <sup>e</sup>	6872.06262
3631	12 <sup>0</sup> 1 2 <sup>e</sup>	6769.49940	3691	09 <sup>3</sup> 0 19 <sup>e</sup>	6804.27448	3751	09 <sup>1</sup> 0 20 <sup>f</sup>	6839.27111	3811	14 <sup>2</sup> 0 23 <sup>e</sup>	6872.65702
3632	13 <sup>3</sup> 0 30 <sup>e</sup>	6769.77295	3692	12 <sup>0</sup> 1 5 <sup>e</sup>	6804.67130	3752	02 <sup>2</sup> 1 47 <sup>e</sup>	6839.69480	3812	15 <sup>3</sup> 0 9 <sup>e</sup>	6873.30196
3633	06 <sup>4</sup> 1 17 <sup>f</sup>	6769.94157	3693	12 <sup>2</sup> 1 4 <sup>f</sup>	6804.67992	3753	01 <sup>1</sup> 0 64 <sup>f</sup>	6839.77371	3813	15 <sup>3</sup> 0 9 <sup>f</sup>	6873.30431
3634	06 <sup>4</sup> 1 17 <sup>e</sup>	6769.94556	3694	12 <sup>2</sup> 1 4 <sup>e</sup>	6804.68140	3754	03 <sup>1</sup> 0 56 <sup>f</sup>	6840.63891	3814	010 <sup>0</sup> 0 3 <sup>e</sup>	6873.69181
3635	13 <sup>3</sup> 0 30 <sup>f</sup>	6770.40483	3695	05 <sup>5</sup> 0 46 <sup>e</sup>	6805.18847	3755	02 <sup>2</sup> 2 29 <sup>e</sup>	6841.46286	3815	15 <sup>1</sup> 0 10 <sup>f</sup>	6874.48229
3636	11 <sup>1</sup> 0 43 <sup>e</sup>	6770.77443	3696	09 <sup>3</sup> 0 19 <sup>f</sup>	6805.20320	3756	15 <sup>1</sup> 0 9 <sup>e</sup>	6842.31619	3816	05 <sup>1</sup> 1 29 <sup>f</sup>	6874.75341
3637	05 <sup>1</sup> 1 28 <sup>e</sup>	6771.28943	3697	03 <sup>1</sup> 0 56 <sup>e</sup>	6805.38733	3757	02 <sup>2</sup> 0 60 <sup>e</sup>	6842.32287	3817	06 <sup>0</sup> 1 20 <sup>e</sup>	6876.52948
3638	15 <sup>1</sup> 0 6 <sup>e</sup>	6771.49435	3698	05 <sup>5</sup> 0 46 <sup>f</sup>	6805.58894	3758	12 <sup>0</sup> 1 7 <sup>e</sup>	6842.76486	3818	12 <sup>2</sup> 0 38 <sup>f</sup>	6878.57876
3639	03 <sup>1</sup> 2 18 <sup>f</sup>	6771.96582	3699	04 <sup>4</sup> 0 51 <sup>e</sup>	6806.66495	3759	06 <sup>6</sup> 1 17 <sup>e</sup>	6843.71782	3819	06 <sup>4</sup> 1 19 <sup>f</sup>	6879.99721
3640	03 <sup>3</sup> 1 41 <sup>f</sup>	6772.09140	3700	09 <sup>5</sup> 0 18 <sup>e</sup>	6807.74967	3760	06 <sup>6</sup> 1 17 <sup>f</sup>	6843.71782	3820	06 <sup>4</sup> 1 19 <sup>e</sup>	6880.00689
3641	15 <sup>1</sup> 0 6 <sup>f</sup>	6772.51500	3701	09 <sup>5</sup> 0 18 <sup>f</sup>	6807.75049	3761	15 <sup>5</sup> 0 5 <sup>f</sup>	6843.87848	3821	06 <sup>6</sup> 0 41 <sup>f</sup>	6880.30142
3642	12 <sup>2</sup> 0 37 <sup>e</sup>	6772.92093	3702	04 <sup>4</sup> 1 35 <sup>f</sup>	6809.40472	3762	15 <sup>5</sup> 0 5 <sup>e</sup>	6843.87848	3822	06 <sup>6</sup> 0 41 <sup>e</sup>	6880.31681
3643	02 <sup>2</sup> 2 28 <sup>f</sup>	6773.09727	3703	04 <sup>4</sup> 1 35 <sup>e</sup>	6809.64394	3763	15 <sup>1</sup> 0 9 <sup>f</sup>	6844.49989	3823	010 <sup>2</sup> 0 2 <sup>f</sup>	6880.43372
3644	04 <sup>2</sup> 0 51 <sup>e</sup>	6773.99737	3704	01 <sup>1</sup> 0 64 <sup>e</sup>	6810.06363	3764	09 <sup>7</sup> 0 17 <sup>f</sup>	6845.17172	3824	010 <sup>2</sup> 0 2 <sup>e</sup>	6880.43542
3645	04 <sup>2</sup> 1 35 <sup>e</sup>	6774.95147	3705	08 <sup>4</sup> 0 28 <sup>f</sup>	6812.15421	3765	09 <sup>7</sup> 0 17 <sup>e</sup>	6845.17172	3825	03 <sup>1</sup> 2 20 <sup>e</sup>	6880.49999
3646	02 <sup>2</sup> 2 28 <sup>e</sup>	6775.38868	3706	05 <sup>3</sup> 1 28 <sup>e</sup>	6812.56806	3766	03 <sup>1</sup> 1 42 <sup>e</sup>	6845.44884	3826	06 <sup>2</sup> 0 42 <sup>f</sup>	6880.71004
3647	08 <sup>2</sup> 0 28 <sup>e</sup>	6776.71486	3707	06 <sup>4</sup> 0 41 <sup>f</sup>	6812.72719	3767	04 <sup>0</sup> 1 36 <sup>e</sup>	6845.52918	3827	12 <sup>2</sup> 1 8 <sup>f</sup>	6880.84209
3648	12 <sup>0</sup> 1 3 <sup>e</sup>	6778.29315	3708	08 <sup>4</sup> 0 28 <sup>e</sup>	6812.73607	3768	14 <sup>4</sup> 0 22 <sup>f</sup>	6845.61747	3828	12 <sup>2</sup> 1 8 <sup>e</sup>	6880.86283
3649	00 <sup>0</sup> 3 19 <sup>e</sup>	6778.34240	3709	05 <sup>3</sup> 1 28 <sup>f</sup>	6814.14020	3769	14 <sup>4</sup> 0 22 <sup>e</sup>	6845.62395	3829	03 <sup>3</sup> 0 56 <sup>f</sup>	6881.41946
3650	09 <sup>1</sup> 0 19 <sup>f</sup>	6778.50649	3710	01 <sup>1</sup> 2 36 <sup>e</sup>	6814.58666	3770	06 <sup>0</sup> 0 42 <sup>e</sup>	6845.98315	3830	04 <sup>2</sup> 1 36 <sup>e</sup>	6881.74023
3651	06 <sup>2</sup> 1 18 <sup>f</sup>	6778.56318	3711	15 <sup>1</sup> 0 8 <sup>e</sup>	6815.76188	3771	15 <sup>3</sup> 0 8 <sup>e</sup>	6846.54115	3831	15 <sup>5</sup> 0 7 <sup>f</sup>	6882.43782
3652	07 <sup>3</sup> 0 35 <sup>e</sup>	6780.25978	3712	06 <sup>4</sup> 0 41 <sup>e</sup>	6816.24886	3772	15 <sup>3</sup> 0 8 <sup>f</sup>	6846.54233	3832	15 <sup>5</sup> 0 7 <sup>e</sup>	6882.43782
3653	14 <sup>4</sup> 0 21 <sup>f</sup>	6780.53153	3713	15 <sup>1</sup> 0 8 <sup>f</sup>	6817.51000	3773	08 <sup>2</sup> 0 29 <sup>f</sup>	6848.22143	3833	12 <sup>2</sup> 0 38 <sup>e</sup>	6884.85334
3654	14 <sup>4</sup> 0 21 <sup>e</sup>	6780.53601	3714	06 <sup>0</sup> 1 19 <sup>e</sup>	6817.56912	3774	01 <sup>1</sup> 1 52 <sup>f</sup>	6848.66738	3834	08 <sup>6</sup> 0 28 <sup>f</sup>	6885.01690
3655	06 <sup>2</sup> 1 18 <sup>e</sup>	6781.08938	3715	07 <sup>7</sup> 0 34 <sup>e</sup>	6818.64098	3775	14 <sup>0</sup> 0 23 <sup>e</sup>	6852.06406	3835	08 <sup>6</sup> 0 28 <sup>e</sup>	6885.01801
3656	09 <sup>0</sup> 0 13 <sup>f</sup>	6781.74761	3716	07 <sup>7</sup> 0 34 <sup>f</sup>	6818.64108	3776	03 <sup>3</sup> 2 19 <sup>e</sup>	6853.72275	3836	09 <sup>1</sup> 0 21 <sup>e</sup>	6885.15309
3657	09 <sup>0</sup> 0 13 <sup>e</sup>	6781.74761	3717	12 <sup>2</sup> 1 5 <sup>f</sup>	6819.32776	3777	03 <sup>3</sup> 2 19 <sup>f</sup>	6853.76591	3837	010 <sup>0</sup> 0 4 <sup>e</sup>	6885.84570
3658	06 <sup>2</sup> 0 41 <sup>e</sup>	6781.99189	3718	12 <sup>2</sup> 1 5 <sup>e</sup>	6819.33122	3778	010 <sup>0</sup> 0 0 <sup>e</sup>	6855.44308	3838	03 <sup>1</sup> 2 20 <sup>f</sup>	6886.81596
3659	15 <sup>3</sup> 0 5 <sup>e</sup>	6784.09792	3719	11 <sup>1</sup> 1 22 <sup>e</sup>	6820.22743	3779	05 <sup>1</sup> 1 29 <sup>e</sup>	6856.29778	3839	11 <sup>1</sup> 1 23 <sup>e</sup>	6887.14242
3660	15 <sup>3</sup> 0 5 <sup>f</sup>	6784.09799	3720	08 <sup>0</sup> 0 29 <sup>e</sup>	6820.66601	3780	05 <sup>1</sup> 0 47 <sup>f</sup>	6857.23274	3840	05 <sup>3</sup> 0 47 <sup>e</sup>	6887.82937



TABLE XX. Interactions observed or expected for H<sup>12</sup>C<sup>14</sup>N.

$Nr$	$T^a$	$ 1\rangle_1$	$ 1\rangle_2$	$J_p^b$	$J_c^c$	$(T_1^m - T_2^m)^d$	$(T_1^m - T_1^c)^e$
1	2967.05	01 <sup>1e</sup> 1	04 <sup>0e</sup> 0	6–16	10	−0.1216	−0.0137
2	4458.34	02 <sup>0e</sup> 1	05 <sup>1e</sup> 0	15–38	25	+0.2536	+0.0778
3	4550.65	02 <sup>2f</sup> 1	05 <sup>1f</sup> 0	19–32	26	−0.1909	−0.0636
4	5491.03	03 <sup>1f</sup> 1	06 <sup>2f</sup> 0	23–34	29	−0.3491	−0.0119
5	5719.63	04 <sup>2f</sup> 1	07 <sup>3f</sup> 0	20–27	23	+0.4662	+0.0081
6	5773.88	05 <sup>5e</sup> 1	08 <sup>6e</sup> 0	06–10	8	+0.1297	+0.0278
7	5773.88	05 <sup>5f</sup> 1	08 <sup>6f</sup> 0	06–10	8	+0.1297	+0.0278
8	5984.35	02 <sup>2f</sup> 2	05 <sup>1f</sup> 1	14–18	16	−0.4622	−0.0164
9	6089.49	03 <sup>3e</sup> 1	06 <sup>2e</sup> 0	30–41	35	−0.4178	−0.0275
10	6195.79	04 <sup>2e</sup> 1	07 <sup>3e</sup> 0	28–31	29	+0.0828	+0.0182
11	6609.74	05 <sup>1e</sup> 1	08 <sup>2e</sup> 0	24–27	26	+0.5060	+0.0113
12	6812.69	05 <sup>3e</sup> 1	08 <sup>4e</sup> 0	23–36	28	−0.0916	+0.0761
13	6845.72	03 <sup>1e</sup> 1	06 <sup>0e</sup> 0	24–51	42	−0.5343	−0.1435
14	6989.82	05 <sup>3f</sup> 1	08 <sup>4f</sup> 0	24–34	30	+0.0251	+0.1334
15	7614.51	04 <sup>4f</sup> 1	07 <sup>3f</sup> 0	40–45	42	−0.4552	−0.0206
16	7820.62	04 <sup>2f</sup> 1	07 <sup>1f</sup> 0	38–51	44	+0.3508	+0.0845
17	8668.13	10 <sup>0e</sup> 1	13 <sup>1e</sup> 0	43–53	47	+0.4342	+0.0229
18	9103.72	11 <sup>1f</sup> 1	14 <sup>2f</sup> 0	43–50	45	+0.3799	+0.0050
19	9142.91	05 <sup>5e</sup> 1	08 <sup>4e</sup> 0	48–48	48	−0.4629	−0.0235
20	9230.00	04 <sup>0e</sup> 1	07 <sup>1e</sup> 0	45–60	54	−0.7343	−0.1704

<sup>a</sup>Term value in cm<sup>−1</sup> of the crossing point.

<sup>b</sup>Range of rotational quantum numbers  $J$  with perturbed eigenenergies.

<sup>c</sup> $J$  at the crossing point.

<sup>d</sup>Perturbed separation between  $|1\rangle_1$  and  $|1\rangle_2$  in cm<sup>−1</sup> at the crossing point  $J_c$ .

<sup>e</sup>Displacement in cm<sup>−1</sup> at the crossing point  $J_c$  of the perturbed  $|1\rangle_1$  eigenstate term value relative to the eigenstate term value calculated without interaction matrix elements.

We expect Coriolis-type resonances for a linear triatomic molecule between rotational manifolds of two vibrational states with similar eigenenergies having the same  $e/f$  quantum number if the difference between the eigenenergy of two eigenstates with the same rotational quantum number  $J$  is very small. The states for which such resonances can be observed depend on the values of fundamental vibrations. For HCN we have  $\nu_3 = 2096 \text{ cm}^{-1} \approx 3 \times \nu_2 = 2136 \text{ cm}^{-1}$  and the vibrational states of the type  $(\nu_1, \nu_2, \nu_3)$  and  $(\nu_1, \nu_2 + 3 \times n, \nu_3 - n)$  have nearly equal energies. The  $J$  for which the eigenenergies are nearly equal depends on the difference between the rotational constants of the two vibrational states. Table XX lists the observed Coriolis-type resonances for H<sup>12</sup>C<sup>14</sup>N.

This work reports the lowest 20 Coriolis-type resonances on the eigenenergy scale. Six resonances have been reported previously by Maki *et al.*,<sup>70</sup> two by Maki *et al.*<sup>75</sup> and four by Mellau *et al.*<sup>17</sup> In Ref. 17, only upper states have been analyzed, the term values of the lower bending states for these four resonances have been improved in the present work. From the analysis of the HOTGAME spectra, 58 Coriolis-type resonances have been found. Some of the 71 vibrational states reported in this paper are involved in the 38 resonances not reported in this paper, all of them with perturbed states above the 6880 cm<sup>−1</sup>.

The transition wavenumbers for states in resonance are listed in the perturbation analysis tables.<sup>82</sup> These tables list the term values for the perturbed eigenenergies determined from the assignment of the perturbed transitions. For all these states it was possible to determine accurate unperturbed spectroscopic constants. At first sight, this deperturbation procedure looks straightforward but one of the major difficulties of the

analysis presented here was the accurate deperturbation of the perturbed states. In all cases the perturbed eigenenergies have been cross checked through as many transitions as possible. The full analysis of all perturbations observed in the [H,C,N] molecular system will be published in a separate paper.

## VII. ROTATIONALLY ASSIGNED *AB INITIO* EIGENENERGIES

Over the last years many global potential surfaces for the [H,C,N] molecular system have been published. Figure 2 shows the vibrational angular momentum dependence of the difference between the experimental and *ab initio* vibrational eigenenergies  $\Delta E_{vib} = T_{v,(J=0)meas} - T_{v,(J=0)abinitio}$  for the potential surface calculated by Tennyson and co-workers.<sup>83–85</sup> The error plot shows a strong vibrational angular momentum dependence. For high  $l$ , the *ab initio* vibrational eigenenergies agree better with the experimental data than for low  $l$ . For the HNC eigenenergies the error plot shows a similar dependence<sup>18</sup> but for HNC the error is smaller for the low  $l$  states. From this comparison it is important to note that for any vibrational analysis based on these *ab initio* data we expect  $l$  dependent errors.

The eigenenergies from the experimental study presented here do not reach up to the barrier of isomerization. If we want to use HOTGAME spectroscopy to climb the ladder of bending states up to the isomerization barrier we have to know roughly which spectroscopic effects we have to expect. Without such knowledge, it is not possible to assign the peaks in a dense HOTGAME spectrum. To understand the eigenenergy structure we can use rovibrational eigenenergy values from *ab initio* calculations. All 45 000 rovibrational eigenval-

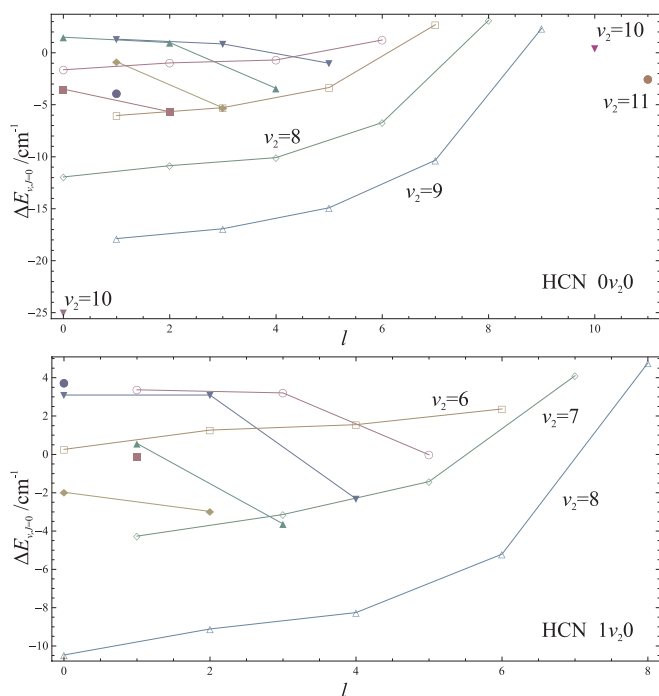


FIG. 2.  $\Delta E_{vib} = T_{v,(J=0)meas} - T_{v,(J=0)abinitio}$  difference between the experimental and *ab-initio* HCN bending vibrational term values.

ues up to the isomerization barrier have already been calculated by Tennyson and coworkers.<sup>85</sup> For the [H,C,N] molecular system only parity and total angular momentum are exact quantum numbers, and the eigenenergies have to be labeled with vibrational quantum numbers in an assignment procedure. The vibrational assignment can be done using either the wave functions<sup>86</sup> or the rotational structure of the eigenenergies as assignment information. The assignment reported here is based on the rotational structure; the assignment procedure is similar to the spectroscopic techniques used to assign high resolution spectra.

This work presents the first results from the rotational assignment of all rovibrational eigenenergies up to the isomerization barrier. The eigenenergies published in Ref. 85 have been used for this analysis; Harris *et al.*<sup>85</sup> rotationally assigned only the first 500 vibrational states up to 10 000  $\text{cm}^{-1}$  relative to the HCN ground state. The rotational assignment of the eigenenergies was given up and restarted many times over the last years. When the assignment work was started there was no reason to try to construct a better PES and to recalculate the rovibrational eigenenergies. The HOTGAME results show<sup>18</sup> that for the HNC part of the potential the vibrational *ab initio* eigenenergies are much less accurate as for the HCN part. For HNC, the conclusions obtained from this study may differ from the results which we may obtain for a more accurate PES (for example, an accurate global PES was necessary<sup>30–32</sup> to interpret the HCP experimental eigenenergies). For the HCN part of the potential and for the very basic features of the eigenenergy structure around the isomerization barrier this eigenenergy list should give us definitive results.

We first describe the procedure used to assign the eigenenergies. First of all the eigenenergy list has been transformed to a format where the eigenenergies can be sorted both

manually and by a computer program. The assignment up to  $J = 10$  has been done by manual sorting of the eigenenergy entries. The entries for  $J > 10$  have been assigned in a first step using a computer program. The automatic assignment was done by assuming that the eigenenergies are described by spectroscopic constants up to the isomerization and that the eigenenergy structure is not disturbed by quantum monodromy.<sup>87</sup> The eigenenergies the program failed to assign have been assigned manually. A data visualization system was implemented for the assignment program, and all assignment decisions have been made by the visual inspection of the eigenenergy structure. With the assignment of increasingly excited rotational levels the rotational structure emerged; the assignment procedure was accompanied by a learning process about the rotational structure. This knowledge was integrated in the further assignment of the states. As the analysis evolved the number of misassignments done by the computer program increased, and it was more and more laborious to progress. At some stages all vibrational states have been checked by the visual inspection and errors corrected. The major problems of the assignment are related to strong local resonances where the automatic procedure jumps to the other state in resonance. The second major problem is related to states that are not in resonance but are separated at a given  $J$  by less than 1  $\text{cm}^{-1}$  and have similar rotational constants. In such a case the assignment can again jump from one vibrational state to another. It was important to learn to identify these possible errors using the visual system. The assignment of the first 500 vibrational states with vibrational excitations up to 10 000  $\text{cm}^{-1}$  relative to the HCN ground state and with  $J$  up to 60 as done by Harris *et al.*<sup>85</sup> was straightforward. The eigenenergies have been assigned by the computer program, only a few manual corrections have been made during the assignment. The assignment of the next 500 vibrational states up to 12 200  $\text{cm}^{-1}$  and with  $J$  up to 60 was much more complicated, and many time consuming manual corrections were necessary. At the end of the assignments some low  $l$  states with  $50 < J < 60$  above the barrier remained unassigned; they did not match any of the vibrational states. The assignments of all low  $l$  states have been changed until none of the eigenenergy values remained unassigned. The changes have been made using the visual interpretation to get a similar eigenenergy structure for all states. The author believes that all these states are still error free up to  $J = 60$ . The rotational assignment of the next 500 vibrational states up to 13500  $\text{cm}^{-1}$  is completed, all eigenenergy values have been assigned. For these states additional tests are necessary; from a visual inspection they all seem to be error free. The rotational states for the next 500 vibrational states up to 14 600  $\text{cm}^{-1}$  have been assigned only up to  $J = 40$ . This assignment should have no significant errors. For many vibrational states in this energy range the analysis for  $J > 40$  is finalized. Around 15 250  $\text{cm}^{-1}$  the first isomerization states with low  $J$  emerge. Even if the number of such states is relatively low for the states above this eigenenergy only a computer aided manual assignment is possible. During the analysis the transition intensities calculated for all pairs of levels have not been used to verify the rotational assignment. The vibrational assignment was done only after all 2400 rotational structures

have been determined. This way it can be ascertained that the assignments are error free both via the vibrational dependence of the rotational constants and through the simulation of the rovibrational bands.

The PES is imperfect; this imperfection transferred to the vibrational eigenenergy gives errors in the order of 0–25  $\text{cm}^{-1}$  compared with the real molecule as shown in Fig. 2. The “effective” internal consistency of the vibrational states is much better, for the bending states it is within 1–2  $\text{cm}^{-1}$ . The vibrational eigenenergies from the PES are consistent with the vibrational structure of a fictitious linear molecule slightly different from HCN.

Using the *ab initio* data we can now make some important predictions, we can give a qualitative and quantitative answer to some still open questions regarding the [H,C,N] molecular system; the qualitative results may be already known either from simple molecular models or from theoretical and experimental work on similar molecules. In this paper, we want to give an answer to the following question: How high can the excitation of pure bending vibration be before the anharmonic force field of the linear molecule ceases to be a valid model? The answer to this question is related to the form of the PES and the width of the barrier.<sup>88</sup> We define the validity of the anharmonic force field from a practical point of view: The anharmonic force field model will be considered valid as long as the vibrational eigenenergies for each substate of a given  $v_2$  can be predicted from a Dunham-type analysis of all substates up to  $v_2 - 1$  with a given accuracy. To give an answer to the question stated above the vibrational energies of the different  $l$  sublevels have been determined in this work up to the isomerization barrier for the  $0v_20$  bending states. The general Dunham-type power series expansion<sup>70</sup> of the  $G_{v_2}(v_1, v_2, l, v_3)$  vibrational constants in the  $(v_1, v_2, v_3)$  vibrational quantum number is

$$\begin{aligned}
 G_{v_2}(v_1, v_2, l, v_3) &= \sum_{i=1}^3 \left( \frac{d_i}{2} + v_i \right) \omega_i - \sum_{i=1}^3 \frac{d_i}{2} \omega_i + \sum_{i=1}^3 \sum_{j=i}^3 \left( \frac{d_i}{2} + v_i \right) \\
 &\times \left( \frac{d_j}{2} + v_j \right) x_{ij} - \sum_{i=1}^3 \sum_{j=i}^3 \frac{d_i d_j}{4} x_{ij} + \sum_{i=1}^3 \sum_{j=i}^3 \sum_{k=j}^3 \left( \frac{d_i}{2} + v_i \right) \\
 &\times \left( \frac{d_j}{2} + v_j \right) \left( \frac{d_k}{2} + v_k \right) y_{ijk} - \sum_{i=1}^3 \sum_{j=i}^3 \sum_{k=j}^3 \frac{d_i d_j d_k}{8} y_{ijk} \\
 &+ \sum_{i=1}^3 \sum_{j=i}^3 \sum_{k=j}^3 \sum_{h=k}^3 \left( \frac{d_i}{2} + v_i \right) \left( \frac{d_j}{2} + v_j \right) \left( \frac{d_k}{2} + v_k \right) \\
 &\times \left( \frac{d_h}{2} + v_h \right) z_{ijkl} - \sum_{i=1}^3 \sum_{j=i}^3 \sum_{k=j}^3 \sum_{h=k}^3 \frac{d_h d_i d_j d_k}{16} z_{ijkl} \\
 &+ l^2 g_{22} + l^4 z_{llll} + \sum_{i=1}^3 \left( \frac{d_i}{2} + v_i \right) l^2 y_{iill} \\
 &+ \sum_{i=1}^3 \sum_{j=i}^3 \left( \frac{d_i}{2} + v_i \right) \left( \frac{d_j}{2} + v_j \right) l^2 z_{ijll}. \quad (4)
 \end{aligned}$$

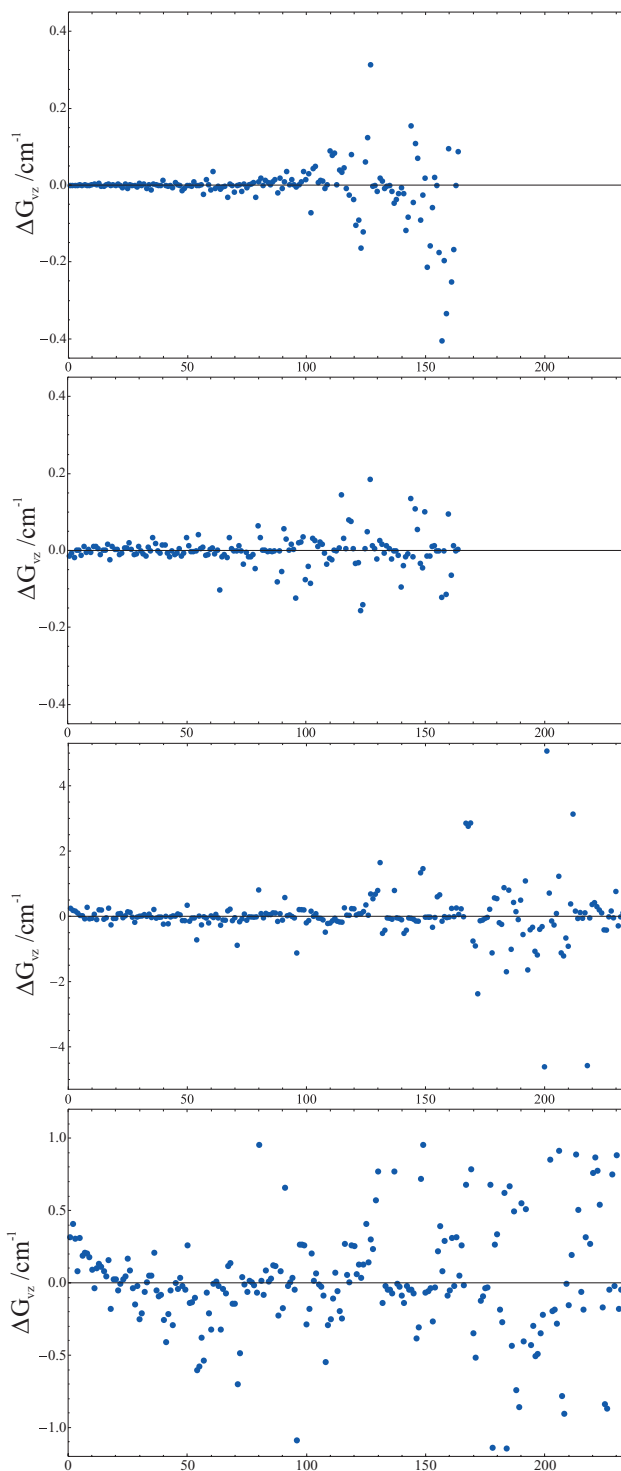


FIG. 3. Upper two panels: The error plot for the power series expansion fit of the 164  $G_{v_2}$  vibrational constants determined by FTIR and laser photoacoustic measurements. The first panel shows the error plot for a weighted fit. The standard deviation of the first 71 vibrational constants decrease from 0.0020  $\text{cm}^{-1}$  to 0.008  $\text{cm}^{-1}$  in the weighted fit. Lower two panels: The error plot for the power series expansion fit of the 234  $G_{v_2}$  vibrational constants determined by FTIR, and laser photoacoustic, SEP and VMP measurements using the same set of parameters. The third panel shows the error plot for a weighted fit.

Despite the fact that for HCN one of the largest sets of vibrational constants has been determined, it is not possible to give a conclusive answer to the question stated above using experimental results. The upper two panels of Figure 3





four states with low  $l$  show barrier effects, the upper eight still corresponds to the linear molecule. The vibrational eigenenergies of the  $v_2 = 23$  vibrational substates are already shifted by up to  $40 \text{ cm}^{-1}$  from the values predicted for the linear HCN. The assignments for  $v_2 = 23$  substates were possible due to the fact that by coincidence for the  $023^7_0$  state no other vibrational states with the expected angular momentum around the predicted wavenumber region exist, the confirmation of these assignments by the exclusion principle (assign all other combination bands and the remaining states are the corresponding delocalized states) is in work. All possible vibrational assignments for the  $v_2 = 23$  substates that match the vibrational dependence of the rotational constants would give prediction errors in order of  $40 \text{ cm}^{-1}$ .

The  $l$  dependence of the first isomerization states shown in the lower panel of Figure 4 qualitatively matches the results of Ref. 87. We expect that the barrier-related effects first appear in the low  $l$  states. The high  $l$  states remain HCN states even at high vibrational excitation. The curve of the prediction errors from high  $l$  to low  $l$  is a smooth curve connecting the quantum states with increasingly delocalized character as predicted in Ref. 87. This means that in an experimental spectrum in the bending wavenumber region the subbands corresponding to  $v_2 > 21$  states will not obey the power series expansion formula; we expect a smooth departure of the band centers with  $l$  beginning from the high  $l$  states to low  $l$  states from the values predicted by the power series expansion formula. The  $v_2 = 24$  states can be assigned only through such an exclusion principle but we can assume that the low  $l$   $v_2 = 24$  states correspond to the states with predominant isomerization character.

The predicted  $l = 0$  state for  $v_2 = 24$  lies  $130 \text{ cm}^{-1}$  above the isomerization states. The first isomerization state is a state with  $l = 0$  and  $J = 0$  at  $15268 \text{ cm}^{-1}$  matching well the  $15205.2 \text{ cm}^{-1}$  reported by Bowman *et al.*<sup>12</sup> It is possible to assign the isomerization states up  $l = 8$  as  $v_2 = 24$  states, the assigned states have nonzero transition intensities to the  $v_2 = 23$  states. Once the manual assignment of the rotational states in this wavenumber region is completed, it will be possible to extract the rotational structure of these states.

Our first conclusion from the study presented above is that the bending vibrational structure of the linear HCN molecule persists approximately up to the bending excitation  $v_2 = 21$ . For vibrational states with  $v_2 > 21$  only for the low angular momentum substates the accommodation of the vibrational eigenenergies to the double well structure of the potential begins to take place. The effect of the double well barrier on the rotational structure of these vibrational states is presented in a second paper.<sup>20</sup>

## VIII. CONCLUSION AND OUTLOOK

The [H,C,N] molecule system models a fundamental case of an asymmetric double well potential. This system involves relatively high energies<sup>83</sup> of  $5281 \text{ cm}^{-1}$  (the position of the second minimum relative to the first one) and  $16\,798 \text{ cm}^{-1}$  (barrier height measured relative to the HCN well) for the heights in a double well potential. An interesting question of molecular physics is how the spectroscopic constants change

when the two isomer molecules are excited from their ground states in the two potential wells up to isomerization energies. An even more important task is to find out up to which excitation levels the model used to describe the molecules in the anharmonic force field around their ground state holds. The manifold of the experimental rotational states for each vibrational excitation localized in the HCN minimum of the potential surface up to  $v_2 = 10$  studied in this work do not show any irregularities from the rovibrational level structure expected for the anharmonic level structure of a linear molecule. We define the rotational states as “regular” when the spectroscopic parameters defined in the matrix elements (Eqs. (1)–(3) describe with the experimental accuracy the measured eigenenergies. Here we allow for each band to accommodate the spectroscopic parameters without imposing any correlation between the spectroscopic parameters corresponding to different vibrational states. If we impose such correlations and fit all transitions in a global fit the correlations between the high order parameters are better resolved. We do not use this type of analysis; we hope to extend the validity of the model for highly excited states by fitting the spectroscopic constants for each vibrational level. This analysis procedure may allow us to detect the signatures due to the double well structure of the PES encoded in the spectroscopic parameters. This type of analysis will be published in a following paper.

This work shows again that high temperature hot gas emission spectroscopy is a very sensitive experimental method for the investigation of transitions between highly excited bending rovibrational states of triatomic molecules and that the concepts behind the SyMath spectroscopic analysis program allow the analysis of very dense emission spectra in a systematic way.

In this work new important experimental data are published to support the theoretical description of many basic questions of molecular physics like large amplitude vibrations, molecular double well potentials or unimolecular reactions. This paper reports the experimental characterization of all 3822 eigenenergies up to  $6880 \text{ cm}^{-1}$  relative to the ground state in the HCN part of the potential surface, the spectroscopic constants for the first 71 vibrational states including highly excited bending vibrations up to  $v_2 = 10$ , perturbed eigenenergies for 20 rotational perturbations, and the list of 11 070 eigenenergies up to  $J = 90$  for the first 123 vibrational substates. The energy range relative to the isomerization path of the HCN/HNC potential where now a complete list of all eigenvalues of the [H,C,N] molecular system with spectroscopic accuracy exists is shown in Figure 5. The eigenenergies above these limits for some highly excited HCN and HNC combination bands have been published up to now in separate papers.<sup>19,21</sup> The eigenenergies reported in this work together with the eigenenergies reported in the previous papers represent one of the most complete sets of experimental data describing a polyatomic molecule in the frequency domain. The spectroscopic parameters reported in these papers represent a very detailed indirect description of the PES for the [H,C,N] molecular system.

Using high resolution spectroscopy we can detect the relative eigenenergies of the molecular system directly. To get



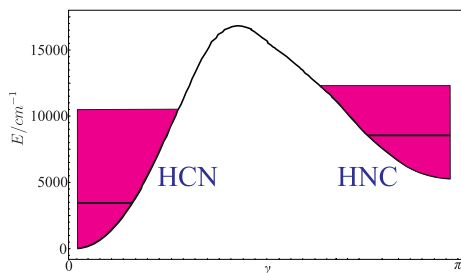


FIG. 5. The range of HCN rovibrational eigenenergies relative to the isomerization path characterised in this paper.

indirect information about the wave functions we have to record and interpret the information encoded in the intensity of the transitions recorded. As the rotational eigenenergies begin to deviate from the structure typical for a linear molecule when the rovibrational excitation increases, the intensity of the transitions also changes from the values expected for a linear molecule. We are working on the methods to extract accurate intensity information from emission experiments and thus have experimental data regarding the wave functions of the highly excited states of the [H,C,N] molecular system.

We have shown that a detailed *ab initio* rovibrational analysis for a polyatomic molecule is possible. Using such an analysis we can understand the molecular physics behind the Schrödinger equation for problems for which perturbation theoretical calculations are no more valid. We have shown that the vibrational structure of the linear HCN molecule persists approximately up to the isomerization barrier and only above the barrier the accommodation of the vibrational states to the double well structure of the potential takes place. The results regarding the rotational structure of the vibrational states have been published in a separate paper.<sup>20</sup>

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- <sup>1</sup>P. K. Pearson, H. F. Schäfer III, and U. Wahlgren, *J. Chem. Phys.* **62**, 350 (1975).
- <sup>2</sup>M. Peric, M. Mladenovic, S. D. Peyerimhoff, and R. J. Buenker, *Chem. Phys.* **82**, 317 (1983).
- <sup>3</sup>M. Peric, M. Mladenovic, S. D. Peyerimhoff, and R. J. Buenker, *Chem. Phys.* **86**, 85 (1984).
- <sup>4</sup>D. Talbi and Y. Ellinger, *Chem. Phys. Lett.* **263**, 385 (1996).
- <sup>5</sup>Z. Bacic and J. C. Light, *Annu. Rev. Phys. Chem.* **40**, 469 (1989).
- <sup>6</sup>M. Mladenovic and Z. Bacic, *J. Chem. Phys.* **93**, 3039 (1990).
- <sup>7</sup>T. J. Lee and A. P. Rendell, *Chem. Phys. Lett.* **177**, 491 (1991).
- <sup>8</sup>J. M. Bowman, B. Gazdy, J. A. Bentley, T. J. Lee, and C. E. Dateo, *J. Chem. Phys.* **99**, 308 (1993).
- <sup>9</sup>T. J. Lee, C. E. Dateo, B. Gazdy, and J. M. Bowman, *J. Phys. Chem.* **97**, 8937 (1993).
- <sup>10</sup>A. J. C. Varandas and S. P. J. Rodrigues, *J. Chem. Phys.* **106**, 9647 (1997).
- <sup>11</sup>Q. Wu, J. Z. H. Zhang, and J. M. Bowman, *J. Chem. Phys.* **107**, 3602 (1997).
- <sup>12</sup>J. M. Bowman, S. Irle, K. Morokuma, and A. Wodtke, *J. Chem. Phys.* **114**, 7923 (2001).
- <sup>13</sup>D. Lauvergnat, A. Nauts, Y. Justum, and X. Chapuisat, *J. Chem. Phys.* **114**, 6592 (2001).

- <sup>14</sup>Y. Justum, F. Gatti, D. Lauvergnat, A. Nauts, and X. Chapuisat, *Spectrochim. Acta, Part A* **58**, 649 (2002).
- <sup>15</sup>A. J. C. Varandas and S. P. J. Rodrigues, *J. Phys. Chem. A* **110**, 485 (2006).
- <sup>16</sup>J. M. Bowman, *Science* **290**, 724 (2000).
- <sup>17</sup>G. Ch. Mellau, B. P. Winnewisser, and M. Winnewisser, *J. Mol. Spectrosc.* **249**, 23 (2008).
- <sup>18</sup>G. Ch. Mellau, *J. Chem. Phys.* **133**, 164303 (2010).
- <sup>19</sup>G. Ch. Mellau, *J. Mol. Spectrosc.* **264**, 2 (2010).
- <sup>20</sup>G. Ch. Mellau, *J. Chem. Phys.* **134**, 194302 (2011).
- <sup>21</sup>G. Ch. Mellau, *J. Mol. Spectrosc.* (in press).
- <sup>22</sup>V. Tyng and M. E. Kellman, *J. Chem. Phys.* **131**, 244111 (2009).
- <sup>23</sup>M. P. Jacobson, J. P. O'Brien, and R. W. Field, *J. Chem. Phys.* **109**, 3831 (1998).
- <sup>24</sup>M. P. Jacobson, J. P. O'Brien, R. J. Silbey, and R. W. Field, *J. Chem. Phys.* **109**, 121 (1998).
- <sup>25</sup>M. P. Jacobson, C. Jung, H. S. Taylor, and R. W. Field, *J. Chem. Phys.* **111**, 600 (1999).
- <sup>26</sup>M. P. Jacobson, R. J. Silbey, and R. W. Field, *J. Chem. Phys.* **110**, 845 (1999).
- <sup>27</sup>M. P. Jacobson and M. S. Child, *J. Chem. Phys.* **114**, 262 (2001).
- <sup>28</sup>M. P. Jacobson and M. S. Child, *J. Chem. Phys.* **114**, 250 (2001).
- <sup>29</sup>M. S. Child, *J. Mol. Spectrosc.* **210**, 157 (2001).
- <sup>30</sup>H. Ishikawa, Yit-Tsong Chen, Y. Ohshima, J. Wang, and R. W. Field, *J. Chem. Phys.* **105**, 7383 (1996).
- <sup>31</sup>H. Ishikawa, R. W. Field, S. C. Farantos, M. Joyeux, J. Koput, C. Beck, and R. Schinke, *Ann. Rev. Phys. Chem.* **50**, 443 (1999).
- <sup>32</sup>J. Bredenbeck, C. Beck, R. Schinke, J. Koput, S. Stamatiadis, S. C. Farantos, and M. Joyeux, *J. Chem. Phys.* **112**, 8855 (2000).
- <sup>33</sup>W. Burmeister, *Verh. Dtsch. Phys. Ges.* **15**, 589 (1913).
- <sup>34</sup>G. Hettner, *Z. Phys.* **1**, 345 (1920).
- <sup>35</sup>A. Kratzer, *Z. Phys.* **3**, 289 (1920).
- <sup>36</sup>E. F. Barker, *Phys. Rev.* **23**, 200 (1924).
- <sup>37</sup>R. M. Badger and J. L. Binder, *Phys. Rev.* **37**, 800 (1931).
- <sup>38</sup>F. S. Brackett and U. Liddel, *Smithson. Ins.* **85**, 1 (1931).
- <sup>39</sup>K. N. Choi and E. F. Barker, *Phys. Rev.* **42**, 777 (1932).
- <sup>40</sup>A. Adel and E. F. Barker, *Phys. Rev.* **45**, 277 (1934).
- <sup>41</sup>G. Herzberg and J. W. T. Spinks, *Proc. R. Soc. London, Ser. A* **147**, 434 (1934).
- <sup>42</sup>P. F. Bartunek and E. F. Barker, *Phys. Rev.* **48**, 516 (1935).
- <sup>43</sup>S. Chen and E. E. Bell, *Phys. Rev.* **75**, 1113 (1949).
- <sup>44</sup>A. E. Douglas and D. Sharma, *J. Chem. Phys.* **21**, 448 (1952).
- <sup>45</sup>H. C. Allen, E. D. Tidwell, and E. K. Plyler, *J. Chem. Phys.* **25**, 302 (1956).
- <sup>46</sup>I. R. Dagg and H. W. Thomson, *Trans. Faraday Soc.* **52**, 455 (1956).
- <sup>47</sup>D. H. Rank, G. Skorinko, D. P. Eastman, and T. A. Wiggins, *J. Opt. Soc. Am.* **50**, 421 (1960).
- <sup>48</sup>K. N. Rao, W. W. Brim, and J. M. Hoffman, *J. Opt. Soc. Am.* **50**, 228 (1960).
- <sup>49</sup>W. W. Brim, J. M. Hoffman, H. H. Nielsen, and K. N. Rao, *J. Opt. Soc. Am.* **50**, 1208 (1960).
- <sup>50</sup>D. H. Rank, D. P. Eastman, B. S. Rao, and T. A. Wiggins, *J. Opt. Soc. Am.* **51**, 929 (1961).
- <sup>51</sup>A. G. Maki, E. K. Plyler, and R. Thibault, *J. Opt. Soc. Am.* **54**, 869 (1964).
- <sup>52</sup>A. G. Maki and L. R. Blaine, *J. Mol. Spectrosc.* **12**, 45 (1964).
- <sup>53</sup>A. G. Maki and D. R. Lide, *J. Chem. Phys.* **47**, 3206 (1967).
- <sup>54</sup>B. D. Alpert, A. W. Mantz, and K. N. Rao, *J. Mol. Spectrosc.* **39**, 159 (1971).
- <sup>55</sup>V. K. Wang and J. Overend, *Spectrochim. Acta* **29 A**, 687 (1973).
- <sup>56</sup>J. Bendtsen and G. M. Edwards, *J. Raman Spectrosc.* **2**, 407 (1974).
- <sup>57</sup>K. K. Lehmann, G. J. Scherer, and W. Klemperer, *J. Chem. Phys.* **77**, 2853 (1982).
- <sup>58</sup>A. M. Smith, K. K. Lehmann, and W. Klemperer, *J. Chem. Phys.* **85**, 4958 (1986).
- <sup>59</sup>J. L. Choe, T. Tipton, and G. Kukulich, *J. Mol. Spectrosc.* **117**, 292 (1986).
- <sup>60</sup>A. M. Smith, U. G. Jørgensen, and K. K. Lehmann, *J. Chem. Phys.* **87**, 5649 (1987).
- <sup>61</sup>A. M. Smith, W. Klemperer, and K. K. Lehmann, *J. Chem. Phys.* **90**, 4633 (1989).
- <sup>62</sup>A. M. Smith, S. L. Coy, and W. Klemperer, *J. Mol. Spectrosc.* **134**, 134 (1989).
- <sup>63</sup>X. Yang, C. A. Rogaski, and A. M. Wodtke, *J. Chem. Phys.* **92**, 2111 (1989).
- <sup>64</sup>G. Duxbury and Y. Gang, *J. Mol. Spectrosc.* **138**, 541 (1989).
- <sup>65</sup>H. Sasada and K. Yamada, *Appl. Opt.* **29**, 3535 (1990).

- <sup>66</sup>X. Yang, C. A. Rogaski, and A. M. Wodtke, *J. Opt. Soc. Am. B.* **7**, 1835 (1990).
- <sup>67</sup>W. Quapp, S. Klee, G. Ch. Mellau, S. Albert, and A. Maki, *J. Mol. Spectrosc.* **167**, 375 (1994).
- <sup>68</sup>A. Maki, W. Quapp, and S. Klee, *J. Mol. Spectrosc.* **171**, 420 (1995).
- <sup>69</sup>A. Maki, W. Quapp, S. Klee, G. Ch. Mellau, and S. Albert, *J. Mol. Spectrosc.* **174**, 365 (1995).
- <sup>70</sup>A. Maki, W. Quapp, S. Klee, G. Ch. Mellau, and S. Albert, *J. Mol. Spectrosc.* **180**, 323 (1996).
- <sup>71</sup>A. Maki, W. Quapp, S. Klee, G. Ch. Mellau, and S. Albert, *J. Mol. Spectrosc.* **185**, 356 (1997).
- <sup>72</sup>M. Lecoutre, F. Rohart, T. R. Huet, and A. G. Maki, *J. Mol. Spectrosc.* **203**, 158 (2000).
- <sup>73</sup>R. Z. Martínez, K. K. Lehmann, and S. Carter, *J. Chem. Phys.* **120**, 691 (2004).
- <sup>74</sup>R. Z. Martínez, K. K. Lehmann, and S. Carter, *J. Chem. Phys.* **125**, 174306 (2006).
- <sup>75</sup>A. G. Maki, G. Ch. Mellau, S. Klee, M. Winnewisser, and W. Quapp, *J. Mol. Spectrosc.* **202**, 67 (2000).
- <sup>76</sup>S. N. Mikhailenko, V. I. Tyuterev, and G. Ch. Mellau, *J. Mol. Spectrosc.* **217**, 195 (2003).
- <sup>77</sup>G. Ch. Mellau, S. N. Mikhailenko, E. N. Starikova, S. A. Tashkun, H. Over, V. I. Tyuterev, *J. Mol. Spectrosc.* **224**, 32 (2004).
- <sup>78</sup>S. N. Mikhailenko, G. Ch. Mellau, E. N. Starikova, S. A. Tashkun, and V. I. Tyuterev, *J. Mol. Spectrosc.* **233**, 32 (2005).
- <sup>79</sup>W. Quapp, M. Hirsch, G. Ch. Mellau, S. Klee, M. Winnewisser, and A. Maki, *J. Mol. Spectrosc.* **195**, 284 (1999).
- <sup>80</sup>W. Quapp, V. Melnikov, and G. Ch. Mellau, *J. Mol. Spectrosc.* **211**, 189 (2002).
- <sup>81</sup>J. P. Hofmann, B. Eifert, and G. Ch. Mellau, *J. Mol. Spectrosc.* **262**, 75 (2010).
- <sup>82</sup>See supplementary material at <http://dx.doi.org/10.1063/1.3598942> for the Tables I–IX of this work, the spectroscopic parameters reported in this paper in a text format file, the experimental and calculated rovibrational eigenenergies of the first ( $v_1, v_2, l, v_3, e/f$ ) 123 rotational states up to  $J = 90$  including the estimated positions of the perturbed levels and the perturbation analysis tables. The original fit outputs and eigenenergy levels from the SyMath analysis program are included as pdf files.
- <sup>83</sup>T. van Mourik, G. J. Harris, O. L. Polyansky, J. Tennyson, A. G. Császár, and P. J. Knowles, *J. Chem. Phys.* **115**, 3706 (2001).
- <sup>84</sup>G. J. Harris, O. L. Polyansky, and J. Tennyson, *Astrophys. J.* **578**, 657 (2002).
- <sup>85</sup>G. J. Harris, J. Tennyson, B. M. Kaminsky, Y. V. Pavlenko, and H. R. A. Jones, *Mon. Not. R. Astron. Soc.* **367**, 400 (2006).
- <sup>86</sup>E. Mátyus, Cs. Fabri, T. Szidarovszky, G. Czako, W. D. Allen, and A. G. Császár, *J. Chem. Phys.* **133**, 034113 (2010).
- <sup>87</sup>K. Efstathiou, M. Joyeux, and D. A. Sadovskii, *Phys. Rev. A* **69**, 032504 (2004).
- <sup>88</sup>T. Barger, A. M. Wodtke, and J. M. Bowman, *Astrophys. J.* **587**, 841 (2003).
- <sup>89</sup>G. Ch. Mellau, *J. Mol. Spectrosc.* (in press).