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WORKING WITH THE HITRAN DATABASE USING HAPI: HITRAN APPLICATION PROGRAMMING INTERFACE

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A HITRAN Application Programming Interface (HAPI [1]) has been developed to allow users on their local machines much more flexibility and power. HAPI is a programming interface for the main data-searching capabilities of the new HITRAN*Online* web service (www.hitran.org). It provides the possibility to query spectroscopic data from the HITRAN [2] database in a flexible manner using either functions or query language. Some of the prominent current features of HAPI are: a) Downloading line-by-line data from HITRAN*Online* b) Filtering and processing the data in SQL-like fashion c) Using conventional Python data structures for representing spectroscopic data d) Possibility to use a large set of third-party Python libraries e) Python implementation of the Hartmann-Tran line profile [3] f) Python implementation of total internal partition sums (TIPS-2011 [4]) for spectra simulations g) High-resolution spectra calculation accounting for pressure, temperature and optical path length h) Providing instrumental functions to simulate experimental spectra i) Possibility to extend the functionality by user's custom code.

Currently the API is a module written in Python and designed to deal with data in multiple formats such as ASCII, CSV, HDF5 and XSAMS.

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References

- [1] www.hitran.org/hapi
- [2] L. S. Rothman et al. JQSRT. 130, 4-50 (2013)
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- [4] A. L. Laraia et al. Icarus. 215(1), 391-400 (2011)