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# Paschen-Back Effect of Hyperfine Structure and Polarization of Resonance Radiation: Sodium

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$$A(J) = a(2\text{-}g) - a\frac{6\Gamma\,(2\text{-}g) - 2\,(g-1)\,L\,(L+1)}{(2L-1)\,(2L+3)} + b\,(g-1)$$

are found to be $a = 8.4 \times 10^{-3}$ and $b = 225.7 \times 10^{-3}$.

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## THE PASCHEN-BACK EFFECT OF HYPERFINE STRUCTURE AND THE POLARIZATION OF RESONANCE RADIATION; SODIUM ($5^2P_{1/2,3/2} - 3^2S_{1/2}$)

N. P. HEYDENBURG

Preliminary measurements on the polarization of resonance radiation of the second doublet of sodium when a magnetic field is applied with its direction parallel to the incident light beam shows that the polarization changes from a value of about 10 per cent in zero magnetic field to a value of 34 per cent in fields less than 100 gausses. In order that a Paschen-Back effect of the hyperfine structure of the $5^2P_{1/2,3/2}$ levels should occur in field strengths of this order of magnitude the hyperfine separation constant for these levels must be of the order $.0005 \times 10^{-3}$ cm$^{-1}$.

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## SUGGESTION AS TO STRUCTURE IN IONIC SOLUTIONS

G. W. STEWART

The Debye-Hückel theory gives about each ion an atmosphere of ions which is preponderately of the opposite sign. While this theory is the best quantitative theory at the present time, yet it neither explains nor discusses the manner in which both the association of ions and of ions with solvent molecules can occur. But in x-ray diffraction in several normal alchohol solutions with lithium chloride as a solute, it has been found that the quasi-structure of the liquids is modified in precisely the manner one would expect if these liquids can be regarded a mixture of liquified ionic crystals of alcoholates and the corresponding alcohols. This suggestion gives a description in terms of what we know about the structure of crystals and of solid solutions. It accounts for both the association of ions and the associations of ions with solvent molecules.

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