Abstract Submitted
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Using hyperfine structure to investigate perturbations between highly-excited states: the HF C-X spectrum[1] JEFFREY PHILIPPSON, RALPH SHIELL, Trent University, ELMAR REINHOLD, WIM UBACHS, Vrije Universiteit, Amsterdam, NL — It has long been known that the B $^1\Sigma^+$ ion-pair state in HF is strongly perturbed by electronic Rydberg states [1]. We present a quantitative analysis of these perturbations through their effects on the fluorine orbital magnetic hyperfine parameter obtained from XUV spectra of the C $^1\Pi$, v=0-X $^1\Sigma^+$, v=0 transition [2]. A Λ-doubling interaction between the ground vibrational level of the C-state and the nearby v=29 level of the B-state produces an apparent rotational state dependence in the values of this parameter derived from the R-branch lines. This work demonstrates how insight into the extent of inter-state perturbations can be obtained from the variation of hyperfine parameters.

[1] A. E. Douglas and F. R. Greening, Can. J. Phys. **57**, 1650 (1979).
[2] J. N. Philippson, R. C. Shiell, E. Reinhold and W. Ubachs, J. Chem. Phys. **129**, 174310 (2008).

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