THE $A^2\Pi$-$X^2\Sigma^+$ BAND SYSTEM OF SrF REVISITED

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Recently DeMille et al[a] proposed using ^{87}SrF and other heavy diatomic molecules to measure nuclear spin-dependent parity violation (NSD-PV). In this scheme the N=0 (+-parity) levels of the $X^2\Sigma^+$ (v=0) state will be magnetically tuned into near degeneracy with the N=1(- parity) levels. The pairs of nearly degenerate levels are mixed by NSD-PV interactions. The process will be monitored using the optical $A^2\Pi$-$X^2\Sigma^+$ transition. Here we report on the analysis of the (1,0) band for ^{88}SrF and the (0,0) band for ^{87}SrF of the $A^2\Pi$-$X^2\Sigma^+$ system recorded at near natural linewidth limit. A combined fit of the optical spectra with the previously recorded rf-transitions[b] and pure rotational transitions[c] was performed.

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[a] D. DeMille, S.B. Cahn, D. Murphree, D.A. Rahmlow and M.G. Kozlov, *Phys. Rev. Lett.* **100** 023003, 2008.
[b] Y. Azuma, W. J. Childs and G. L. Goodman, T. C. Steimle, *J. Chem. Phys.* **93** 1990 93, 5533.
[c] H.-U. Schltz-Pahlmann, Ch. Ryzlewicz, J. Hoeft,and T. Trring, 93,74 (1982)*Chem. Phys. Lett.* **93** 74, 1982.