# HIGH RESOLUTION ROTATIONAL SPECTROSCOPY STUDY OF THE ZEEMAN EFFECT IN THE $^2\Pi_{1/2}$ MOLECULE PbF

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Motivated by the ongoing search for the CP-violating electron electric dipole moment (e-EDM), rotational spectra of the radicals $^{207}$Pb$^{19}$F and $^{208}$Pb$^{19}$F were measured using a supersonic jet Fourier transform microwave spectrometer. Zeeman splitting was examined for 10 $^{207}$PbF and 9 $^{208}$PbF $J = 1/2$ and $J = 3/2$ transitions using three pairs of Helmholtz coils capable of generating magnetic fields up to $\sim 4$ Gauss. Transitions were observed with 0.5 kHz accuracy over a range of $2 - 26.5$ GHz. Zeeman splittings as small as 6 kHz were able to be resolved. The observation of these field dependent spectra allowed for the determination of the two body-fixed g-factors, $G_{\parallel}$ and $G_{\perp}$, of the electronic wave function. The final values obtained compare reasonably well with recently calculated values and will be reported at the meeting. The precise determination of the body fixed g-factors is an important step in a possible future e-EDM experiment using either the $^{207}$Pb$^{19}$F or $^{208}$Pb$^{19}$F molecule.

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