Abstract Submitted
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New spectroscopic constants from high-resolution Stark spectroscopy of the PbF molecule: Implications for state-selection in an e-EDM measurement[1] TAO YANG, JAMES COKER, JOHN FURNEAUX, NEIL SHAFER-RAY, Homer L. Dodge Department of Physics and Astronomy, Unviersity of Oklahoma — Lead mono-fluoride (PbF) is ideally suited to carry out a search for an e-EDM: PbF has relatively large molecular dipole moment (making it easy to polarize), a strong effective internal field (making it sensitive to an e-EDM), ground-state sensitivity to the e-EDM (allowing for long coherence time), a small magnetic moment (making it less sensitive to stray magnetic fields) and convenient optical spectroscopy. Here we use a sensitive multi-photon ionization technique (pseudo-continuous-REMPI) to carry out $A \leftarrow X_1$ spectroscopic measurements. New dipole moments and spectroscopic constants for the A state are presented. With these new data we have isolated an e-EDM sensitive Stark transition at a magic electric field that both polarizes the molecule and allows for sharp transitions that are immune to variations in electric field.

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Tao Yang
Homer L. Dodge Department of Physics and Astronomy, Unviersity of Oklahoma

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