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Experimental determination of the dipole moment of the PbF molecule: Implications for an e-EDM measurement TAO ZHENG YANG, POOPALASINGAM SIVAKUMAR, CHRISTOPHER MCRAVEN, PRIYANKA MILINDA RUPASINGHE, NEIL SHAFER-RAY, Homer L. Dodge Department of Physics and Astronomy, University of Oklahoma — The lead mono-fluoride (PbF) molecule has many features that make it an attractive candidate for the measurement of the electron's electric dipole moment (e-EDM). These features include a large dipole moment combined with closely spaced levels of opposite parity. This situation greatly reduces the electric field required to become sensitive to the e-EDM. Here a new and highly sensitive multi-photon ionization technique (pseudo-continuous-REMPI) is used to carry out Stark spectroscopy of PbF for the first time. Data obtained are analyzed in terms of an effective spin-rotational Hamiltonian to determine the dipole moment of the molecule. This dipole moment is compared to theoretical prediction and implications for an e-EDM measurement are discussed.

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