

Abstract Submitted
for the DAMOP12 Meeting of
The American Physical Society

Improved characterization of the A-state of lead monofluoride and measurement of its dipole moment JAMES COKER, TAO ZH. YANG, JOHN E. FURNEAUX, NEIL E. SHAFER-RAY, University of Oklahoma, HOMER L. DODGE DEPT. OF PHYSICS AND ASTRONOMY TEAM — Lead monofluoride (PbF) is an attractive candidate for measurement of the electric dipole moment of the electron (eEDM) because of its small g -factor and its large enhancement factor [1]. In order to measure the eEDM with PbF, broad and accurate knowledge of its spectroscopic constants is needed. Although the ground (X_1) state constants are known to 100 kHz precision [2], the excited states have not been as precisely characterized. A promising state for hyperfine optical detection of the X_1 state is the A state [3]. Using a time-of-flight detection scheme described in the work, we present new spectroscopic data of isolated $^{208}\text{Pb}^{19}\text{F}$. The analysis of which yields constants of the A state and molecular dipole moments of the X_1 and A states to new precision.

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[2] R. J. Mawhorter et al., Phys. Rev. A **84**, 022508 (2011).

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Date submitted: 27 Jan 2012

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