## Abstract Submitted for the DAMOP17 Meeting of The American Physical Society

Near-degeneracy in Excited Vibrational States of <sup>207</sup>PbF RICHARD MAWHORTER, ALEXANDER NGUYEN, YONGRAK KIM, AN-DREAS BIEKERT, Pomona College, TREVOR SEARS, Stony Brook University and Brookhaven National Laboratory, JENS-UWE GRABOW, Leibniz Universitaet Hannover, A.D. KUDASHOV, L.V. SKRIPNIKOV, A.V. TITOV, A.N. PETROV, NRC Kurchatov Institute PNPI, & St. Petersburg State University — Highresolution Fourier transform microwave (FTMW) spectroscopy studies of <sup>207</sup>PbF [1,2] have demonstrated the near-degeneracy of two levels of opposite parity. These have attracted attention for the study of parity violation effects and the variation of fundamental constants [3] using <sup>207</sup>PbF. Further theoretical work has improved our detailed understanding of both <sup>207</sup>PbF and <sup>208</sup>PbF [4], and furthermore recently indicated that the finely split +/- parity levels grow monotonically closer for higher vibrational states. Our experimental results for v = 0.3 confirm this, and are in excellent agreement with our extended theoretical calculations up to v = 4; both will be presented. TJS acknowledges support from Contract No. DE-SC0012704 with the U.S. Department of Energy, Office of Science, supported by its Division of Chemical Sciences, Geosciences and Biosciences within the Office of Basic Energy Sciences., as do RM, AB, YK, & AN from Pomona College & J-UG from the Deutsche Forschungsgemeinschaft (DFG).<sup>1</sup> L.D. Alphei, et al., Phys. Rev. A 83, 040501 (R) (2011). <sup>2</sup> R. Mawhorter, et al., Phys. Rev. A 84, 022508 (2011). <sup>3</sup> V.V. Flambaum, et al., Phys. Rev. A 88, 052124 (2013). <sup>4</sup> A.N. Petrov, et al., Phys. Rev. A 88, 010501 (R) (2013).

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