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Spectroscopy of ThF^+ in aim of a new eEDM measurement with trapped molecular ions NOAH SCHLOSSBERGER, KIA BOON NG, SUN YOOL PARK, JILA, University of Colorado Boulder, YAN ZHOU, University of Nevada, Las Vegas, TANYA ROUSSY, TANNER GROGAN, YUVAL SHAGAM, ANTONIO VIGIL, MADELINE PETTINE, JUN YE, ERIC CORNELL, JILA, University of Colorado Boulder — A measurement of the electric dipole moment of the electron (eEDM) can constrain beyond-standard-model physics. Our group at JILA has measured the eEDM to a precision of 1.3e-28 e cm [1]. While a second generation experiment with technological and measurement scheme improvements is underway, we are developing a third generation experiment aimed at increasing the sensitivity to the eEDM with several key improvements: (i) a new molecular ion species, ThF^+, which has an eEDM-sensitive ground state and an effective electric field of 38 GV/cm [2], and (ii) a new trap structure allowing for continuous measurement. The first step in designing this experiment is understanding the energy structure of our molecule. In this talk we discuss recent ThF^+ spectroscopic results and their implications on the upcoming third generation measurement. [1] Cairncross, W. B. et. Al. Phys. Rev. Lett. 119, 15 (2017), 153001. [2] Skripnikov, L. V., and A. V. Titov. Phys. Rev. A 91.4 (2015): 042504.

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