

Abstract Submitted  
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**Technical Progress Towards Measurement of the Anapole Moment of  $^{137}\text{Ba}^{19}\text{F}$** <sup>1</sup> SIDNEY CAHN, MAXIMILIAN BEYER, Yale Univ, JAI-MIN CHOI, Chonbuk National University, DAVID DEMILLE, Yale Univ — Nuclear spin-dependent parity violation (NSD-PV) effects are due to several interactions, including the nuclear anapole moment, a parity-violating electromagnetic moment confined to the interior of the nucleus. The supersonic beam source generated the proof-of-principle results for the  $^{138}\text{Ba}^{19}\text{F}$  control molecule for the naturally abundant but spin-0  $^{138}\text{Ba}$  nucleus. We have improved the apparatus by incorporating a pulse-tube refrigerator to produce a bright buffer-gas source of  $^{137}\text{Ba}^{19}\text{F}$  molecules at cryogenic temperatures, building an MTS-locked (modulation transfer spectroscopy) laser and PDH (Pound-Drever-Hall)-locked cavity for laser locking to address the largest systematic found in earlier work, and performing the laser spectroscopy of  $^{137}\text{Ba}^{19}\text{F}$ .

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