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Progress Towards Measurement of the Anapole Moment of ^{137}Ba^{19}F SIDNEY CAHN, EMINE ALTUNTAS, DAVID DEMILLE, Yale University, MIKHAIL KOZLOV, Petersburg Nuclear Physics Institute — Weak interactions inside the nucleus produce a toroidal current distribution around the axis of nuclear spin. This current distribution, known as the nuclear anapole moment is the dominant source of nuclear spin-dependent parity violation (NSD-PV) effects for nuclei with nucleon number $A \geq 20$. We propose to measure the anapole moment of ^{137}Ba^{19}F. To diagnose systematics and establish a measurement sequence we use ^{138}Ba^{19}F, which has negligible NSD-PV effects. ^{138}Ba^{19}F has a larger isotopic abundance and fewer hyperfine levels compared to those of ^{137}Ba^{19}F. Therefore fluorescence signals from ^{138}Ba^{19}F are approximately *26* times larger than those from ^{137}Ba^{19}F. Here we present planned improvements to our apparatus, including a magnetic hexapole lens to improve the molecular beam flux and preliminary spectroscopy measurements with ^{137}Ba^{19}F.

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