Abstract Submitted
for the DAMOP08 Meeting of
The American Physical Society

Progress towards a Nuclear Anapole Moment Measurement in ^{137}BaF. SIDNEY CAHN, DENNIS MURPHREE, DAVID RAHMLOW, DAVID DEMILLE, Yale University, EDWARD DEVENEY, Bridgewater State College, RICHARD PAOLINO, United States Coast Guard Academy, MIKHAIL KOZLOV, Petersburg Nuclear Physics Institute — We report progress in our experiment to measure nuclear spin- dependent parity violating effects. Our first goal is to measure the nuclear anapole moment of ^{137}BaF. We have developed an intense, cold beam of BaF molecules by laser ablation and supersonic expansion. This beam is injected into a homogeneous 0.5 T magnetic field. The field is measured and shimmed with an array of custom broadband NMR probes and commercial room-temperature shim array. We have observed Stark-induced transfer between two Zeeman-rotational sublevels of ^{138}BaF as a function of magnetic field, indicative of the Zeeman-tuned level crossing of these two states. A similar level-crossing in ^{137}BaF will be used to amplify the effect of the nuclear anapole moment to an observable level.

Sidney Cahn

Date submitted: 01 Feb 2008 Electronic form version 1.4