

Abstract Submitted
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Preparation of the anapole moment measurement in a chain of isotopes¹ DONG SHENG, JONATHAN HOOD, LUIS OROZCO, Joint Quantum Institute, Department of Physics and NIST, University of Maryland — We present the current status of the experimental effort towards the measurement of the anapole moment in different isotopes of francium. The anapole is a parity violating, time reversal conserving nuclear moment that arises from the weak interaction among nucleons, and should be sensitive to the changes in the nuclear structure configuration among the isotopes. The anapole is a unique probe of the weak interaction in the presence of the strong interaction. The system is currently being tested with rubidium and we have analyzed the sensitivity to measurements with a chain of Rb isotopes. Our experimental scheme involves a collection of cold atoms in a blue-detuned dipole trap located at the anti-node of a microwave cavity. The standing wave would drive a parity forbidden E1 transition between hyperfine ground states, interfering with an allowed transition. The rate of transitions depends on the positive or negative handedness of the apparatus and the measurement of their difference is proportional to the anapole moment. The experiment will use of the ISAC radioactive beam facility at TRIUMF.

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