Abstract Submitted
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**Neutron Lifetime Experiment at LANL** STEVEN CLAYTON, DAVID BARLOW, Los Alamos National Laboratory, DAVID BOWMAN, Oak Ridge National Laboratory, VINCENZO CIRIGLIANO, Los Alamos National Laboratory, BRADLEY FILIPPONE, KEVIN HICKERSON, California Institute of Technology, GARY HOGAN, Los Alamos National Laboratory, ADAM HOLLEY, North Carolina State University, CHEN-YU LIU, Indiana University, MARK MAKELA, CHRISTOPHER MORRIS, Los Alamos National Laboratory, SEPPO PENTILLA, Oak Ridge National Laboratory, DANIEL SALVAT, Indiana University, ALEXANDER SAUNDERS, PETER WALSTROM, Los Alamos National Laboratory, ALBERT YOUNG, North Carolina State University — A proposal will be presented for a new experiment, which has been developed with Los Alamos National Laboratory LDRD funding, to measure the neutron lifetime using ultracold neutrons in a magneto-gravitational trap. In the proposed experiment, an asymmetric bowl-shaped Halbach array of permanent magnets provides the levitating and laterally confining magnetic field for ultracold neutrons produced by the Los Alamos solid deuterium source. Quasi-trapped orbits, in which relatively fast neutrons may escape during the measurement period, are suppressed by the asymmetry of the bowl and small-scale field variations designed into the magnet array. Progress on the construction of the prototype apparatus will be described.

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