Testing Standard Model Symmetries with Cold Antiprotons and Trapped Antihydrogen

Speaker: Gerald Gabrielse  
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**Date and Time:** 2:00 pm  Friday, Feb 20, 2015  
**Location:** Lory Student Center, Room 382

*Refreshments at 3:45 pm*

**Abstract**

Antiprotons cooled to 4 K energies -- energies ten orders of magnitudes lower than in particle accelerators -- make it possible to directly test the fundamental CPT symmetry of the Standard Model, and to sensitively compare the gravitational acceleration of the antiproton and the proton. Cold antiprotons and cold positrons together make it possible to produce antihydrogen atoms cold enough to be trapped at a magnetic field minimum. Lasers are now being prepared to cool the trapped antihydrogen atoms. The eventual goal is using precise laser spectroscopy to compare the structure of antihydrogen and hydrogen atoms.

**Bio:**

Professor Gabrielse obtained his Ph. D. in physics from the University of Chicago. He is the Leverett Professor of Physics at Harvard University. He is the spokesperson of the ATRAP collaboration at CERN. He is a member of the National Academy of Science, a fellow of APS, and is the recipient of numerous awards, including the Julius Lilienfeld Prize and the Davisson-Germer Prize of APS.