

UCLA Department of Physics & Astronomy

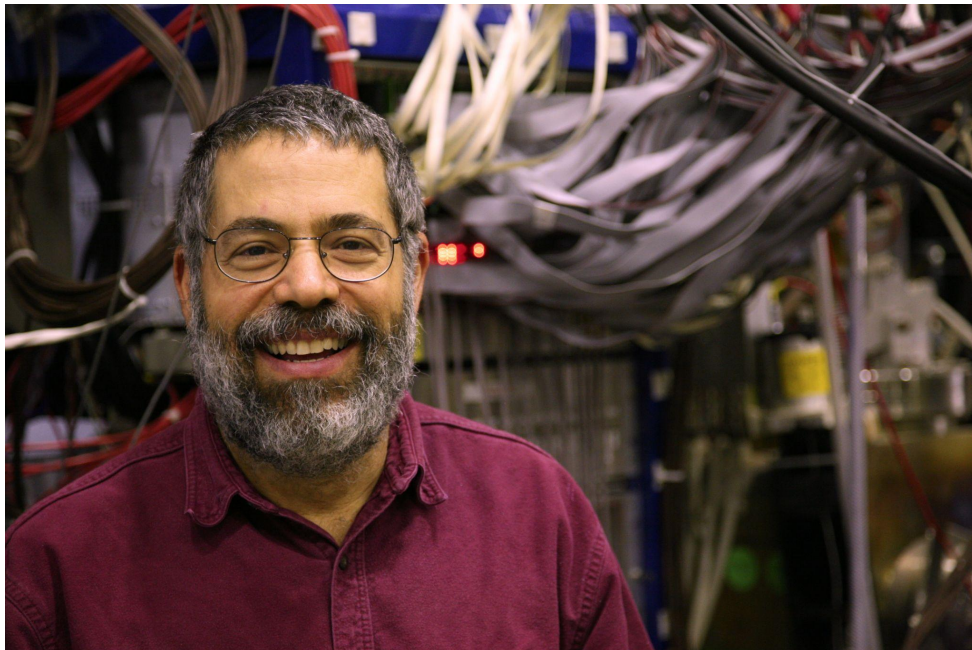
COLLOQUIUM

Thursday, February 8th, 2024 at 4 p.m.

PAB 1-434

Measuring the Effect of Gravity on Antimatter

Joel Fajans
U.C. Berkeley



Recently experiments have measured the effect of gravity on antimatter with the first “direct”, i.e., freefall-style or Galilean Leaning Tower of Pisa style measurements. In agreement with theory and indirect experiments, these experiments, performed by CERN’s ALPHA collaboration, show that antimatter, specifically antihydrogen atoms, fall downward with an acceleration within about 25% of $g = 9.8\text{m/s}^2$. Strongly ruled out is the possibility of antimatter falling upwards. Thus, the results are compatible with the weak equivalence principle.

This talk will review why this topic remained a perhaps open question, document some of the current other experiments attempting to make a direct measurement, discuss some of the history of early, failed, attempts to do a direct measurement, and conclude with a description of how the measurement was actually made using a magnetic balance.