CU Physics Department Particle Seminar

Wednesday, March 30, 2011 705 Pupin Hall 1:00 PM

New Experiments with Antiprotons

Fermilab operates the world's most intense antiproton source. Newly proposed experiments can use those antiprotons either parasitically during Tevatron Collider running or after the end of the Tevatron Collider program. For example, the annihilation of 5 to 8 GeV antiprotons is expected to yield world-leading sensitivities to hyperon rare decays and CP violation. It could also provide the world's most intense source of tagged D0 mesons, and thus the best near-term opportunity to study charm mixing and, via CP violation, to search for new physics. Other precision measurements that could be made include properties of the X(3872) and the charmonium system. An experiment using a Penning trap and an atom interferometer could make the world's first measurement of the gravitational force on antimatter. These and other potential measurements using antiprotons could lead to a broad physics program at Fermilab in the post-Tevatron era.

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