Contribution ID: **1238** Type: **Poster**

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 Tevatron Collider finishes in about 2011. For example, the annihilation of 8 GeV antiprotons might make the world's most intense source of tagged D^0 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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Track Classification: 05 - Heavy Quarks Properties (experiment and theory)