

**Antiproton Production and Cooling at the Tevatron \***

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S. O'DAY, R. PASQUINELLI, FERMILAB - Plans to upgrade the Fermilab Antiproton Source in preparation for Main Injector running are currently being implemented. A permanent magnet storage ring is also being built to expand Fermilab's antiproton storage capacity while adding the ability to recover stored Tevatron antiprotons. A beam sweeping system has been designed to sweep the beam as it strikes the production target to insure that the target survives without compromising the antiprotons yield per proton on target. Changes are being made to the lithium collection lens just downstream of the target which will permit higher gradient operation. The Debuncher ring transverse stochastic cooling will be upgraded to include plunging pickups operating at 4° Kelvin and a ramped  $\eta$  which is .006 during bunch rotation and .009 during cooling. The Accumulator ring stacktail momentum system bandwidth will be expanded from 1-2 GHz to 2-4 GHz to handle a higher antiproton flux. The  $\eta$  of this machine will be changed from -.023 to -.012 to accommodate the new 2-4 GHz stacktail bandwidth while avoiding Schottky band overlap. An asymmetric lattice is presently under consideration to reduce bad mixing in the Accumulator.

\* Work supported by the US Department of Energy under contract No. DE-AC02-76CH03000.