

Antiproton beam manipulation for the GBAR experiment

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The interaction between antimatter with gravitational fields remains a fundamental question in physics. The GBAR experiment aims to measure the gravitational acceleration of antihydrogen atoms in a terrestrial gravitational field. Achieving precise measurements requires the production of ultra-cold antihydrogen atoms. A key milestone in the GBAR experiment is the production of antihydrogen ions, which allows for the creation of ultra-cold antihydrogen atoms by cooling the ions and subsequently neutralizing them. Antihydrogen atoms and ions are produced by the interaction between a positronium cloud and an antiproton beam. The antiproton beam is decelerated using a drift tube decelerator, and a Penning-Malmberg trap equipped with a superconducting solenoid is used to capture and manipulate the beam, enhancing the production rate of antihydrogen atoms. In this presentation, we discuss recent experimental results on antiproton beam trapping, cooling, compression, and extraction.

Paper submission Plan

No

Best Presentation

Yes

Contribution track

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