

Antimatter studies at the CERN Antiproton Decelerator

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A growing number of collaborations are performing experiments at the CERN Antiproton Decelerator (AD), the only available facility providing slow antiprotons suitable for precision measurements with anti-atoms and bare antiprotons. While the majority of these experiments first aimed at forming antihydrogen atoms with the main goal of probing their atomic transitions for a sensitive test of CPT (the combined Charge, Parity and Time reversal) symmetry, the measurement prospects broadened in the last years. More recently, experiments have begun to employ antihydrogen atoms to test the validity of the Weak Equivalence Principle for antimatter by measuring the fall of these anti-atoms in the Earth's gravitational field. Three experiments are now pursuing this goal with different experimental approaches. Moreover, the AD also hosts dedicated high-precision experiments with antiprotons for CPT tests. After giving an overview of the experimental techniques common to those experiments, my talk will highlight the latest achievements and breakthroughs of the past years at the AD and will detail the upcoming experimental challenges towards the precision area with antihydrogen atoms.