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Measuring the fall of antihydrogen: the AEGIS experiment at CERN

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Experimental studies of Antihydrogen have a short history, but an ambitious future: a first generation of experiments, in which cold charged plasmas of positrons and antiprotons were combined, produced large numbers of antihydrogen atoms for the first time in 2002. These have given place to a second wave of experiments which are attempting the next steps of trapping and cooling antihydrogen atoms, with the long term goal of carrying out precision laser spectroscopy comparisons of the spectra of hydrogen and antihydrogen, and thus perform a precision test of the CPT symmetry.

In parallel, advances in other fields have made possible the concept of a beam of antihydrogen atoms, which opens the door to measuring the gravitational interaction of (neutral) antimatter. The AEGIS experiment aims in a first step to reach a 1% precision on the gravitational interaction of antihydrogen by measuring its free fall over its parabolic trajectory. The experiment and the techniques involved will be discussed.

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