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The First Cold Beam of Antihydrogen Atoms from a Cusp Trap

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Antihydrogen is the simplest atom made entirely of antimatter, consisting of an antiproton and a positron. The study of its matter counterpart, the hydrogen atom, has produced some of the most precise determinations of physical quantities. High precise measurements of antihydrogen will allow to achieve direct tests of the fundamental symmetries of Nature through the comparison with hydrogen. The ASACUSA Collaboration has recently succeeded in producing the first beam of cold antihydrogen atoms. Antihydrogen was formed in a cusp trap by overlapping a cloud of low energy antiprotons with a positron plasma. The peculiar magnetic configuration has permitted the formation of an antihydrogen beam: 80 antiatoms were detected around 3 m downstream of the production region in a field free region where high resolution spectroscopy of the hyperfine structure of the ground state can be performed.

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