Production and Detection of Cold Antihydrogen Atoms

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We report on the first production and detection of cold antihydrogen atoms, a hot result from the ATHENA collaboration at CERN Antiproton Decelerator (AD). Antihydrogen atoms at very low energy were produced by mixing trapped antiprotons and positrons in a cryogenic environment. The neutral anti-atoms have been detected directly when they escape the trap and annihilate, producing a characteristic signature in an imaging particle detector.