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【471】Exotic matter production with anions

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We propose a new platform to investigate the interaction of antiprotons with ordinary matter at the kinetic energy of a few K or lower. We will confine antiprotons and negative ions in a Penning trap to prepare both species at low temperature within the same trapping volume. After co-trapping, the anions will be photodetached with a laser pulse to form cold neutral atoms, which will interact with the nearby antiprotons. This setup will allow us to measure the interaction of matter and antimatter as a function of time by correlating the detection events with the laser pulse and opens the door to precision spectroscopy of the antiprotonic Rydberg atoms.

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