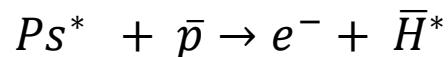


Status of the AEgIS experiment

The primary goal of AEgIS is to perform a gravity test with a cold antihydrogen (\bar{H}) beam. AEgIS proposes to create such a cold beam based on a charge exchange reaction between cold trapped antiprotons (\bar{p}) and excited (Rydberg) Positronium (Ps):



The Ps atom is the bound state of an electron and its antiparticle the positron: $Ps = (e^- + e^+)$.

Last years, great efforts have been made for gathering all the ingredients needed for the charge-exchange reaction:

- the catching of a dense and cold antiproton plasma in a 1 T multi-rings Penning trap
- the formation of Ps atoms, and efficient laser excitation of the Ps cloud

I will present the recent progress we made on the two above-mentioned points.

To open the discussion, I will introduce one of the projects we are developing, which aims to improve the antihydrogen formation in AEgIS: sympathetic cooling of antiprotons using laser-cooled molecular anions (C_2^-).