

# Accumulation of positrons from a linac based source

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The aim of the GBAR experiment is to measure the effect of gravity on antihydrogen atoms [1]. Those are created by interactions of antiprotons with a dense positronium cloud. The antiprotons are obtained from the decelerator complex at CERN now composed of two steps: the Antiproton Decelerator, in which the beam reaches 5 MeV energy, and ELENA where it is further decelerated to 100 keV. Positronium (Ps) is obtained by implantation of 4 keV positrons onto a mesoporous silica film. The goal is to obtain a cloud of the order of  $10^{10}$  positrons. In order to obtain the necessary intense positron beam, a 9 MeV linac, accelerates electrons toward a tungsten target equipped with a mesh moderator. The resulting slow positron beam is then transported to a buffer gas trap where particles are cooled by interaction with nitrogen and CO<sub>2</sub> and accumulated in a 5T multi-ring Penning-Malmberg trap.

We present the performances of trapping and accumulation of positrons.

[1] P. Pérez et al., *Hyperfine interaction* 223,21 (2015)

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