Contribution ID: **92** Type: **Poster**

Preliminary Design Study of a Superconducting Spectrometer for Light Galactic Antinuclei Detection

Tuesday 13 May 2025 22:08 (2 minutes)

We present a preliminary design study of a superconducting magnetic spectrometer aimed at detecting light galactic antinuclei in space. As an initial step, we are developing a smaller demonstrator spectrometer for testing aboard a stratospheric balloon above Antarctica. To assess the feasibility of this approach, we performed a Geant4 simulation to evaluate the survival probability of antimatter flux at balloon altitudes. Furthermore, we optimized the geometric configuration of the superconducting coils to enhance charged particle bending and improve the accuracy of momentum reconstruction. This study represents a crucial step toward the development of a space-based instrument for rare antimatter searches.

Eligibility for ”Best presentation for young researcher” or ”Best poster for young researcher” prize

Yes

Authors: GRYNIUK, Oleksii; IUPPA, Roberto (Universita degli Studi di Trento and INFN (IT)); MASCIONE, Daniela (INFN - National Institute for Nuclear Physics); MASCIONE, Daniela (Universita degli Studi di Trento and INFN (IT)); PERINELLI, Alessio

Presenter: GRYNIUK, Oleksii

Session Classification: Posters