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DESIGN STUDIES OF A RETARDING POTENTIAL ENERGY ANALYSER (RPEA) FOR LOW-ENERGY ANTIMATTER EXPERIMENTS

Monday 8 September 2025 16:00 (2 hours)

Retarding Potential Energy Analysers (RPEAs) are widely used diagnostic instruments for measuring energy distribution of charged particle beams. In this work we will discuss the conceptual design studies of a novel RPEA for low-energy antimatter beams (antiprotons/positrons). Simulation tools such as CST studio and G4Beamline were used for studying the prototype RPEA and to optimize its geometry for considering different parameters such as, beam characteristics, collector geometry, the losses occurring due to secondary electrons and annihilation, grid design etc. The proposed diagnostic can offer the potential for measuring the energy and current of low-energy (1–10 keV) antiproton/positron bunches in experiments such as AEgIS, with promising energy resolution. However, further detailed studies are required to assess its viability for implementation in a practical detector system.

Footnotes

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