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Future opportunities at the CERN Antimatter Factory

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The Antimatter Factory at CERN focuses on producing low-energy antiprotons for high-precision antimatter experiments. It comprises the Antiproton Decelerator (AD), which is an adaptation of the '80s Antiproton Collector (AC), and the recently commissioned Extra Low ENergy Antiproton ring (ELENA), which was commissioned in 2018. Initially, the AD could support only a single experiment at a time, typically in eight-hour shifts, delivering approximately 3×10^7 antiprotons at 5.3 MeV with a two-minute repetition period. Currently, with the integration of ELENA, the facility can supply four bunches of 1×10^7 antiprotons each at 100 keV, maintaining the same repetition period, and is capable of serving up to four experiments simultaneously or more in a sequential round-robin arrangement. The introduction of ELENA has significantly enhanced performance, suggesting new possibilities for low-energy antimatter physics research. This progress, along with the increasing complexity of the facility, calls for a thorough review of its consolidation strategy to ensure its longevity. Moreover, it presents an opportunity to contemplate future upgrades to meet the evolving demands of the scientific community. This presentation will detail the present performance and will explore feasible upgrade options for the current facility.

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