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A New Longitudinal Diagnostic System for CERN's Antiproton Machines

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A new powerful longitudinal diagnostics system is being developed for the two CERN's antiproton machines, the Antiproton Decelerator (AD) and the Extra Low Energy Antiproton ring (ELENA).

The system is based upon a fast computer, fully integrated in CERN's controls infrastructure, with high processing power and hosting a Linux server running real-time software for online data analysis. Its deep memory makes it particularly suitable for AD's and ELENA's long cycles. The system can measure beam intensity for both bunched and debunched beams. For bunched beams, characteristics such as bunch length and peak values will be available, as well as turn-by-turn beam profiles. For debunched beams, Dp/p and average frequency can be measured.

The system will provide essential input for RF and cooling systems setup and monitoring. It will also be used by operators to monitor the performances of the two machines and the overall efficiency of CERN's antiproton chain. This paper shows preliminary beam results as well as future steps and plans for exporting the same system to other CERN machines.

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