

Scheduling beams at CERN, the new AD central timing

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A central timing (CT) is a dedicated system responsible for driving an accelerator behaviour. It allows operation teams to interactively select and schedule cycles. While executing a scheduled cycle a CT sends out events which (a) provide precise synchronization and (b) information what to do - to all equipment operating an accelerator. The events are also used to synchronize accelerators between each other, which allows passing of a beam between them.

At CERN there are currently ten important accelerators. Each of them is different and has some unique functionalities. To support the variety and not to constrain operation teams there are three major types of the CT systems. The one which has been developed most recently handles the Antiproton Decelerator (AD). Uniqueness of the AD machine comes from the fact that it works with antimatter and instead of accelerating particles it decelerates them. As a result, an AD cycle differs from other machines and required development of a new CT.

In this paper we describe the differences and systems which has been developed to support unique AD requirements. In particular, a new AD CT is presented and functionality it offers to operation teams who program the machine. We present also the central timing extensions planned to support a new decelerator ELENA, which will be connected to AD to further slow down the beam. We show that with these extensions the new central timing becomes a very generic system. Generic to a point where it is valid to ask a question if it could be used as a common solution for all CERN accelerators.

Tertiary Keyword (Optional)

Control systems

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