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Discussion of suitable diagnostic components for the cSTART project

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The compact STorage ring for Accelerator Research and Technology (cSTART) is a project which aims to demonstrate the injection and storage of a laser wakefield accelerated (LWFA) beam. The project mainly consists of an injector, a transfer line and a storage ring. The plan is to have two injectors, one is the photo-injector FLUTE (Ferninfrarot Linac- und Test-Experiment) and the other one is a LWFA injection line.
Different kinds of challenges characterize this project, starting from the lattice design and ending with the commissioning. Beam diagnostics is one of these challenges and plays a key role in the success of the commissioning and the storage of the beam. Ultra-short bunches (in the order of 5 fs) with typically low bunch charge (down to 1 pC) are to be stored in the VLA-cSR (Very Large Acceptance compact Storage Ring) at high repetition rates. Therefore, to be able to measure a signal of such bunches, we need very sensitive and high dynamic range diagnostics with very fast readout electronics.
In this presentation, an overview of the cSTART project will be presented, along with a report on the recent studies and suggestions on a suitable beam diagnostic system for the storage ring.

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