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Characterisation of the foreseen turn-by-turn beam position instrumentation for the cSTART storage ring

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The KIT cSTART project (compact storage ring for accelerator research and technology) aims to demonstrate injection and storage of a high intensity ultra-short bunch using the FLUTE LINAC, as well as a laser-plasma accelerator (LPA).
cSTART is planned to operate with a wide range of demanding parameters, such as bunch charge, bunch length and energy spread (from the LPA), making it extremely challenging for the choice of beam diagnostics with large dynamic ranges that are capable of operating within specifications.
Moreover, turn by turn measurements are necessary in the cSTART storage ring as bunch characteristics are expected to dramatically change within a single turn.
In this paper, we will describe the planned beam diagnostics system of the cSTART storage ring focusing on the turn-by-turn signal processing and reporting on characterization tests which were performed.

Footnotes

Paper preparation format

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Europe

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