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## **Laser cooling of bunched relativistic ion beams at the FAIR SIS100**

The heavy-ion synchrotron SIS100 is the core machine of the Facility for Antiproton and Ion Research (FAIR) in Darmstadt, Germany. It is capable of accelerating a large range of ions, produced by the injector (the upgraded GSI facility), up to highly relativistic velocities and extracting them for unique experiments, e.g. APPA/SPARC. In order to cool such intense beams of relativistic heavy highly charged ions, laser cooling of bunched ion beams was preferred. Therefore, the laser cooling pilot facility at the SIS100, being also the only in-ring experiment, is currently being realized. We will present this project and give an update of its current status. We will also give an overview of the laser and detector systems that will be used.

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