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## GSI Facility Overview

*Wednesday 25 June 2025 15:25 (25 minutes)*

GSI hosts a heavy ion accelerator facility based on several injector LINACs, a synchrotron, and two storage rings for versatile applications at fix-targets covered with various beam parameters. Moreover, the first part of FAIR (Facility for Antiproton and Ion Facility) is under technical realization, with the first beam expected in 2027.

The talk will focus on recent developments in user operation. One highlight is the simultaneous acceleration of the two ions  $^4\text{He}$  and  $^{12}\text{C}$  in the LINAC and synchrotron as used for cell irradiation; the C-beam modifies the cell, and the He-beam serves for diagnostics. Multi-ion species were stored in the ESR storage ring as well. For fixed target experiments, radioactive ions and pion beams were generated from the thick target. At the synchrotron using slow extraction, significant improvements are now operable, which led to an increase in the statistical accuracy of the experiments by at least a factor of 2 compared to the previous year's operation. At the LINAC, longitudinal diagnostics are frequently used, giving significant insight into the non-standard beam dynamics. The talk will conclude with an overview of the realization of FAIR in the coming years.

### Summary

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