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The FAIR storage ring complex to deliver intense high-quality secondary beams for experiments

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The FAIR project aims at producing very dense secondary beams of rare isotopes and antiprotons. The concept reposes on two pillars: the production of high-intensity high-energy primary beams (all ions from protons up to bare Uranium) and the implementation of dedicated beam cooling techniques to compress the secondary beams. Versatile parallel operation of the accelerator facility with different beams and experiments is foreseen. The FAIR storage ring complex plays the central role in the preparation of and experiments with secondary beams. It comprises three storage rings with a magnetic rigidity of 13 Tm (CR, RESR, NESR), the HESR ring with a magnetic rigidity of 50Tm and the rings of the low-energy experimental facility FLAIR.

After a short overview of the FAIR accelerator facility, the specific functions, the various concepts and design issues of the storage rings will be summarised, focussing on the 13 Tm storage rings. Emphasis will be given to the expected machine performance with respect to the requirements of the experimental communities.

Primary author: Dr DIMOPOULOU, Christina (GSI)

Presenter: Dr DIMOPOULOU, Christina (GSI)

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