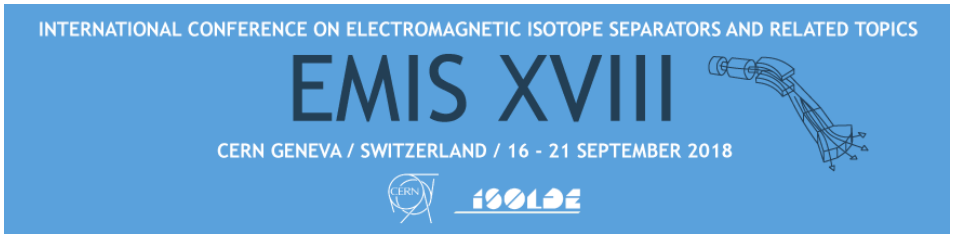

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New high-resolution and high-transmission modes of the FRS open up new perspectives for FAIR phase-0 experiments

Friday, 21 September 2018 12:00 (15 minutes)

The FRagment Separator FRS at GSI is primarily a powerful in-flight separator for short-lived exotic nuclei based on multiple magnetic rigidity analysis (Bρ_{max}=18 Tm) and atomic energy loss in shaped matter. The quadrupole magnets determine the focal-plane conditions and the hexapole magnets can be used to correct aberrations, which play a crucial role for projectile fragments characterized by a large phase space. The ion-optical system of the FRS can also be operated as a high-resolution spectrometer for precise momentum measurements. For example, the investigation of the influence of the tensor force as a part of the nuclear force has been performed with the addition of the resolving powers of the four dispersive dipole magnet stages. Dispersion-matched ion-optical settings, specially shaped degraders and tools to reduce the fragment energy spread are methods applied in high-resolution experiments. –Other experiments have their preference for high rates which is enabled through thick targets and high optical transmission. In this contribution, we report on new ion-optical developments which are essential for the planned FAIR phase-0 experiments.

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