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Commissioning of the DESIR High-Resolution mass Separator

Thursday, 6 October 2022 15:00 (20 minutes)

DESIR is the low-energy part of the SPIRAL2 ISOL facility in the final design at GANIL. The High-Resolution mass Separator (HRS) included in DESIR is a 180° symmetric online separator with two 90° magnetic dipole sections arranged with electrostatic quadrupoles, sextupoles and a multipole on the mid plane. The HRS is now completely mounted at LP2IB/CENBG and under commissioning for the next years before its transfer at the entrance of the DESIR facility. Optical aberrations, mainly introduced by the dipoles, must be corrected up to the highest order to guarantee an optimal resolution of the separator. They are measured with a pepperpot-type emittance-meter, analysed then corrected with the 48-poles electrostatic multipole.

Up to now, 2nd order (hexapolar) and part of 3rd order (octupolar) aberrations are under control and an optimal FWHM separation has been achieved for two beams with $\Delta E/E = \Delta M/M = 1/25000$.

We will present the effects of optical aberrations on the beam and its emittance figure, as well as the effect of the associated corrections with the multipole.

Finally, we will show the latest resolution measurements and associated methodology.

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