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Experimental results and numerical simulations of the HIE ISOLDE short Faraday Cup

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The space for beam diagnostics at the HIE-ISOLDE REX postaccelerator is limited in the longitudinal dimension due to the beam optics requirements. The diagnostic boxes that will be installed between the cryomodules contain among other instruments a short Faraday cup (FC), which is used for measuring the beam currents. The characterization of the performance for this FC is very critical due to its special geometry, as the cup aperture diameter is larger than its total length. A prototype FC has been installed in a diagnostic box of REX-ISOLDE, and tested with stable beam of several beam energies and intensities since last August. Different polarization schemes have been proposed and evaluated experimentally. In this work we will present some of the results obtained in these tests, complementing our analysis with numerical calculations of the electrostatic fields present in the cup.

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