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Feasibility of experiments at TSR@ISOLDE from the accelerator point of view

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Recently transfer-induced fission experiments where proposed at TSR@ISOLDE, requiring luminosities in the 1027 1/(s cm2) range. In the talk the feasibility of those experiments from the accelerator point and as well the achievable luminosity will be discussed.
Furthermore experiments with the external spectrometer HELIOS needs ion beams with transverse emittances of about 0.01 mm mrad and an energy spread of roughly 0.025 %. Cold ion beams with emittances below 0.01 mm•mrad and momentum spreads lower than 10-4 can be obtained with electron cooling inside the TSR . In the additional slow extraction process, carried out at the TSR, the emittances as well the momentum spread of the extracted ion beam could not preserve so far. Intra beam scattering effects and rf noise transferred to the extraction kicker leads to an significant increase of the phase space. To maintain the emittances as well the momentum spread the ion beam has to be cooled throughout the whole extraction procedure. A new slow extraction scheme using dispersive electron cooling, to switch off only horizontal electron during extraction, is proposed to maintain the good beam quality of an electron cooled ion beam. In addition fast extraction is investigated to provide a cold ion beam for HELIOS.

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