ISOLDE Workshop and Users meeting 2018



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Type: Invited

REX/HIE-ISOLDE Machine Development

Friday 7 December 2018 09:50 (20 minutes)

Several aspects of optimisation or development towards a more complete understanding of the REX/HIE-ISOLDE linear accelerator will be presented.

We will first demonstrate the possibility to map a spectrum of contamination from residual gas ions, on a wide mass-to-charge ratio range, helping on the anticipation of the ion beam purity. Additionally, an effort for the optimisation of the ion pulse time distribution extracted from the REXEBIS charge breeder, called Slow Extraction, will be described. Moreover, recent measurements will exhibit a potential performance improvement of the REXEBIS by operating its electron beam at specific energies related to resonance peaks of the di-electronic recombination process.

The precise knowledge of the ion beam transversal and longitudinal properties are also of primary importance for the experimental apparatus. For this purpose, a new method will be depicted, that allow for the determination of the transversal and the longitudinal ion beam properties, at intensities too weak to make use of conventional beam-line monitoring detectors (for instance, Faraday cups). The principle behind the identification of the transversal and the longitudinal beam properties are well-known and based on multiple acquisitions of the respective trace-space projections or slices (notably: the quadrupole-scan method, the double-slit method or the three-gradient method). The novelty of the presented techniques resides in the use of a silicon detector.

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