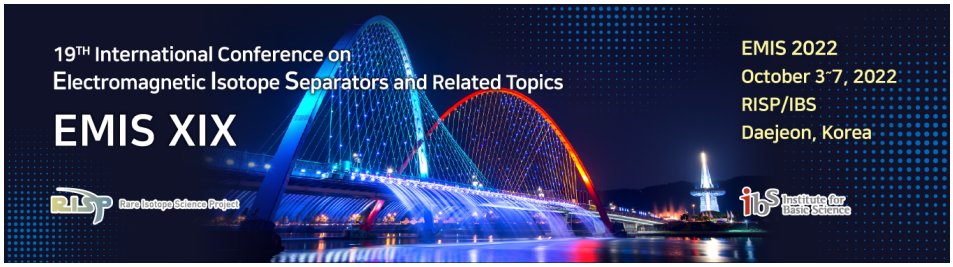

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Generation of contaminant-like beams for magnetic spectrometer characterization

Monday, 3 October 2022 22:14 (8 minutes)

Characterizing a (high resolution) magnetic mass separator can be often tricky as it is difficult to find a stable ion source providing species with close enough masses to separate.
As these instruments perform a momentum separation (B rho = p/q), their mass and energy resolution are strictly the same at first order. One can use this property to characterize the mass resolution of a spectrometer through its energy resolution. Hence, multiple identical beams with close energies can be used to test a magnetic spectrometer in almost real conditions.
The method we will present allows to populate an ion beam with multiple close and well-defined energies. It consists in using an arbitrary pulse generator to temporally change the acceleration potential of the ion source, and create a custom energy distribution, where the length of the pulse is the production ratio of the contaminant and the amplitude its relative energy (mass).
We will present the entire setup as well as results of mass-like separation on the DESIR High Resolution Separator.

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