NUSTAR Seminar

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Zoom Link

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Current status and future hopes for decay-correlated mass spectroscopy of SHE

The KEK Wako Nuclear Science Center operates the KEK Isotope Separation System (KISS) which utilizes a small gas stopping cell to produce low-energy beams of multi-nucleon transfer (MNT) products.
The group also co-manages, with the RIKEN SLOWRI Team, gas cells and multi-reflection time- of-flight mass spectrographs (MRTOF) at both the end of ZeroDegree line of BigRIPS and following the GARIS-II recoil separator; a new system is presently under construction for use with the GARIS-III recoil separator.

At KISS and the GARIS facilities, one of the primary interests are transuranium nuclides.
To aid in these measurements, which often involve extremely low production yields, we have been developing ion detectors that allow for ToF- decay correlated measurements. In the case of beta-decay, this can suppress signals from stable molecular ions while for alpha-decay it can provide a clear identification of radioactive ions.
Both decays allow for the simultaneous determination of atomic mass and decay half-life in a single measurement. I will present recent results from experiments using the GARIS-II and KISS MRTOF systems, demonstrating our high resolving power (regularly approaching m/Δm=1,000,000) and the efficacy of the ToF-decay correlation measurement to suppress contaminants, identify radioactive ions, and determine decay half-lives. In addition, plans for future measurement campaigns with MNT at KISS (and the planned KISS-2) and with fusion-evaporation products at GARIS-II/III, along with future system improvements, will be discussed -- including the currently under- development gamma-ToF detector.

Convener: T. Dickel
Secretary: R. Krause / D. Press
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