

Nuclear spectroscopy at KISS / KISS での核分光実験

For nuclear spectroscopy in the vicinity of N=126 and U-238, we have developed KEK Isotope Separation System (KISS), which is an argon-gas-cell-based laser ion source combined with an on-line isotope separator, installed in the RIKEN Nishina center [1]. The nuclei around N = 126 are produced by multi-nucleon transfer reactions (MNT) [2] of Xe-136 beam (10.75 MeV/A) impinging upon a Pt-198 target. The KISS facility has a detector station for beta-gamma spectroscopy and a MRTOF system for precise mass measurement. By using these devices, we have successfully performed beta-gamma spectroscopy of Os, Ta [3], and Re isotopes for the half-life measurements and study of beta-decay schemes, and in-gas-cell laser ionization spectroscopy of Pt, Ir, and Os isotopes for evaluating the magnetic moments and the trend of the charge-radii (deformation parameters).

In the presentation, we will report the present status of KISS, experimental results of nuclear spectroscopy in the heavy region, and future plan of KISS activities.

[1] Y. Hirayama et al., Nucl. Instrum. Methods B 353 (2015) 4.; B 463 (2020) 425.

[2] Y.X. Watanabe et al., Phys. Rev. Lett. 115 (2015) 172503.

[3] P. Walker et al., Phys. Rev. Lett 125 (2020) 192505.

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