



## Recent results of GARIS-II + MRTOF experiment

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We have constructed the SHE-Mass facility, which is a combined system of a RIKEN gas-filled recoil ion separator GARIS-II and a multi-reflection time-of-flight mass spectrograph MRTOF-MS, to perform the precision mass measurement of heavy nuclides. The novel detector called “ $\alpha$ -TOF” was recently developed, which allows us to correlation measurement of the time-of-flight of nuclides and their subsequent  $\alpha$ -decay.

The  $\alpha$ -TOF detector enables highly accurate mass measurement by using the  $\alpha$ -decay signals as a footprint of the nuclide, even for rare events of a few events per day. The  $\alpha$ -TOF detector also allows for nuclear spectroscopy studies using MRTOF-MS. As a demonstration experiments, we have directly determined the masses of  $^{206,207}\text{Ra}$  isotopes and the excitation energy of the isomeric state of  $^{207}\text{Ra}$  from time-of-flight and correlated  $\alpha$ -decay measurements. We have also successfully the direct measured the mass of Db isotope.

In this presentation, I would like to talk about the results of these recent measurements.