

Precision Mass and Decay Lifetime Measurements at the HIAF-SRing facility

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The established storage ring mass spectrometry at the current operational HIRFL-CSR facility in Lanzhou has demonstrated its efficacy in accurately measuring the masses of short-lived nuclei that are far from beta stability. With the advent of the High Intensity heavy-ion Accelerator Facility (HIAF), the beam intensity is anticipated to be three orders of magnitude higher than what can currently be provided by the HIRFL. Consequently, a dedicated and versatile Spectrometer Ring (SRing) will be constructed at the high-energy end of the HIAF facility.

It is planned to extend the successful mass and lifetime measurement program to the future HIAF-SRing facility in Huizhou, China. The primary focus will be on measuring the unknown masses and exotic decay modes of highly-charged ions of heavy neutron-rich nuclei. To achieve this objective, two time-of-flight (TOF) detectors as well as two sets of position-sensitive Schottky detectors are currently under construction for the HIAF-SRing. Additionally, high-order magnets are being considered to ensure precise control over the ion-optics of the SRing.

This poster will present the detailed plan and instrumentation for the HIAF-SRing mass spectrometry project.

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