

# Progress of mass measurements for short-lived nuclides in CSR Lanzhou

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## Abstract

Recent commissioning of the Cooler Storage Ring at the Heavy Ion Research Facility in Lanzhou enabled us to conduct high-precision nuclear mass measurements at the Institute of Modern Physics in Lanzhou (IMP). In the past few years, mass measurements were performed using the storage-ring-based isochronous mass spectrometry (IMS) via the fragmentation of the energetic  $^{36}\text{Ar}$ ,  $^{40}\text{Ar}$ ,  $^{58}\text{Ni}$ ,  $^{78}\text{Kr}$ ,  $^{86}\text{Kr}$ , and  $^{112}\text{Sn}$  projectiles. Masses of short-lived nuclides on both sides of the  $\beta$ -stability line have been measured. Relative mass precisions of  $10^{-6}\sim 10^{-7}$  are routinely achieved and some issues in the studies of nuclear structure and nuclear astrophysics have been addressed. In this talk, the technique details and experimental results are presented, and recent progress and some preliminary results are briefly introduced. The IMS with double ToF detectors for velocity measurements are also developed in CSRe, the future experiments using this double ToF IMS are discussed.