

Mass measurements at the HRIBF

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Mass is one of the most fundamental properties of nuclei, crucial for understanding nuclear structure beyond the valley of stability. At the Holifield Radioactive Ion Beam Facility, we have assembled a simple setup consisting of a position-sensitive channel plate and an ion chamber near the focus of the analyzing magnet of the the 25 MV tandem accelerator. This setup has allowed us to measure mass differences between known- and unknown-mass constituents of isobarically mixed beams of accelerated fission products produced using the ISOL technique. The advantage of accelerated beam, making robust independent measurement of Z possible, has allowed us to measure masses for nuclides, including ^{79}Cu and ^{86}Ge , whose halflives are less 0.2 seconds and whose production constitutes a part in a billion of the total fission yield.

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