

## Nuclear mass measurements for the *r* process

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Nuclear binding energies are one of the key inputs for nuclear astrophysics calculations. High-precision atomic mass measurements using Penning trap mass spectrometers coupled to radioactive ion beam facilities have made it possible to determine binding energies for many new exotic nuclei. In this talk, I will give a short overview of nuclear mass measurements and present some highlights related to the *r* process. We have recently measured several new neutron-rich rare-earth nuclei with the JYFLTRAP Penning trap at the IGISOL facility. These nuclei located in the midshell region between  $N = 82$  and  $N = 126$  are relevant for the formation of the rare-earth peak in the *r* process. The observed reduced neutron pairing resulted in a smoother calculated abundance pattern for the rare-earth peak [1].

[1] M. Vilen et al., Phys. Rev. Lett. (2018), arXiv:1801.08940 [nucl-ex] .