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Accurate measurement of masses of neutron-rich nuclides at JYFLTRAP

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Atomic masses of about 50 neutron-rich Sr, Y, Zr, Mo, Tc and Ru isotopes have been measured with accuracies of about 10 keV employing a Penning trap setup [1] at the IGISOL facility. The most neutron-rich isotopes measured were ^{100}Sr , ^{101}Y , ^{105}Zr , ^{110}Mo , ^{111}Tc and ^{114}Ru . Our results indicate significant errors among the previously published values deduced from the beta-endpoint measurements. For Zr and Mo the most neutron-rich studied isotopes are found significantly less bound (1 MeV) as compared to the 2003 Atomic Mass Evaluation. Strong correlation between nuclear deformation and the binding energy is observed in the two-neutron separation energy in all studied isotope chains. Extension of these experiments towards more neutron-rich nuclei and their possible impact on r-process will be discussed.

[1] S. Rinta-Antila et al., Phys. Rev. **C 70**, 011301 (R) (2004).