

## Shape phase transition at $N = 90$ using wide-range mass measurements at the FRS Ion Catcher

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### Abstract

The transition between the spherical and deformed shapes of the nuclei, known as shape phase transition, can be observed in the evolution of their two neutron separation energies ( $S_{2n}$ ) with the increase of the neutron number [1]. For such studies, precise measurements of the nuclear masses are crucial. An experiment that took place at the FRS Ion Catcher [2] setup at GSI measured for the first time a wide-range of more than 50 neutron-rich nuclides during one run. They are above  $Z=50$  and around the  $N=90$  region of the shape phase transition and include masses which were measured directly for the first time. The results presented in this contribution include the comparison between the trends of the measured and literature  $S_{2n}$  energy, as well as its first derivative ( $dS_{2n}$ ). Calculations from a Hartree-Fock based model [3] are compared with results from several other state-of-the-art models and with the measured  $S_{2n}$  trends.

### References

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- [3] N. Minkov et al, *Phys. Rev. C* **105** (2022) 044329.