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Gamma spectroscopy of neutron-rich isotopes in the A = 100 region produced in fission induced by cold neutrons with new FIPPS array

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The occurrence of shape coexistence in nuclei with N = 58 and 59, suggests that the evolution of the deformation is a gradual process. Our goal was to study N = 57, 96Y isotope where only a few states were known. Additionally, we decided to investigate whether deformed structures are present in the 94Y nucleus which lies 5 neutrons away from the N = 60 boundary and in the 97Y with 59 neutrons. During the talk also the new result concerning the enhancement of octupole collectivity in the N=60, 96Zr isotope will be mentioned [1].
The yttrium isotopes have been produced in the fission of 235U active target induced by cold neutron from the reactor at ILL. The level scheme has been established based on multi-fold gamma-ray coincidence relationships measured with the new highly efficient HPGe array FIPPS [2]. For completess also recent data from the previous fission experiment with EXILL spectrometer has been added.
During the analysis, over 50 new gamma transitions in 96Y isotope, have been identified [3, 4]. Additionally, the analysis revealed that the long 8+ isomer is located 400 keV higher than it was reported in NNDC base, which has to be taken into account in reactor antineutrino anomaly calculations [5]. By using the delayed-coincidence method it was possible to identify a few weak transitions above the 201-ns isomeric state, which seem to form a rotational band. In the case of 94Y isotope, 11 new gamma transitions have been identified [6] while in the 97Y, 8 new prompt lines can be observed [4]. Angular correlation analysis supported by shell-model consideration allowed to propose spin-parity assignments for most of the new levels.

[1] Ł.W. Iskra et al., Phys. Lett. B 788, 396 (2019)
[2] C. Michelagnoli et al., EPJ 193, 04009 (2018)
[3] Ł.W. Iskra et al., Europhys. Lett. 117, 12001 (2017) and ILL annual report
[4] Ł.W. Iskra et al., (in preparation)
[5] A.A. Sonzogni et al., Phys. Rec. C 91, 011301(R) (2015)
[6] Ł.W. Iskra et al., Phys. Scr. 92, 104001 (2017)

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