TRIAXIALITY IN NEUTRON-RICH Tc, Rh, AND Ag NUCLEI

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Shape coexistence and shape transitions are of current physics interest for neutron-rich nuclei with Z > 40, N > 58 [1,2]. Study of triaxiality in this region is of much interest. High-spin level schemes of $^{105, 107, 109}$Tc (Z =43), $^{110, 111, 112, 113}$Rh (Z = 45)[3]. and ^{115,117}Ag[4] are proposed by our group, based on fission-gamma data accumulated with Gammasphere in 2000. Bands built on various $g_{9/2}$ proton orbitals, K=1/2 intruder orbitals and band crossings related to $h_{11/2}$ neutron alignment are observed. Triaxial-rotor-plus-particle model calculations performed with $\varepsilon = 0.32$ and $\gamma = 22.5^0$ on the prolate side of maximum triaxiality yielded the best reproduction of the excitation energies, signature splittings and branching ratios of the Tc isotopes. The model calculations gave the best fit to those of the Rh isotopes at near maximum triaxiality with $\varepsilon = 0.28$, $\gamma = 28^0$. The tight doublet structure in the main $7/2^+$ bands in the Ag isotopes indicates maximum triaxiality of $\gamma=30^0$.

The side band built on an excited $11/2^+$ with low excitation energy predominantly feeding the $9/2^+$ and very weakly the $7/2^+$ state of the yrast band also provides evidence of triaxiality. The E2 strength is mainly dictated by the diagonal E2 reduced matrix element, which vanishes for $\gamma=30^0$.

[1] J. Skalski *et al*., Nucl. Phys. A**617**, 282 (1997)

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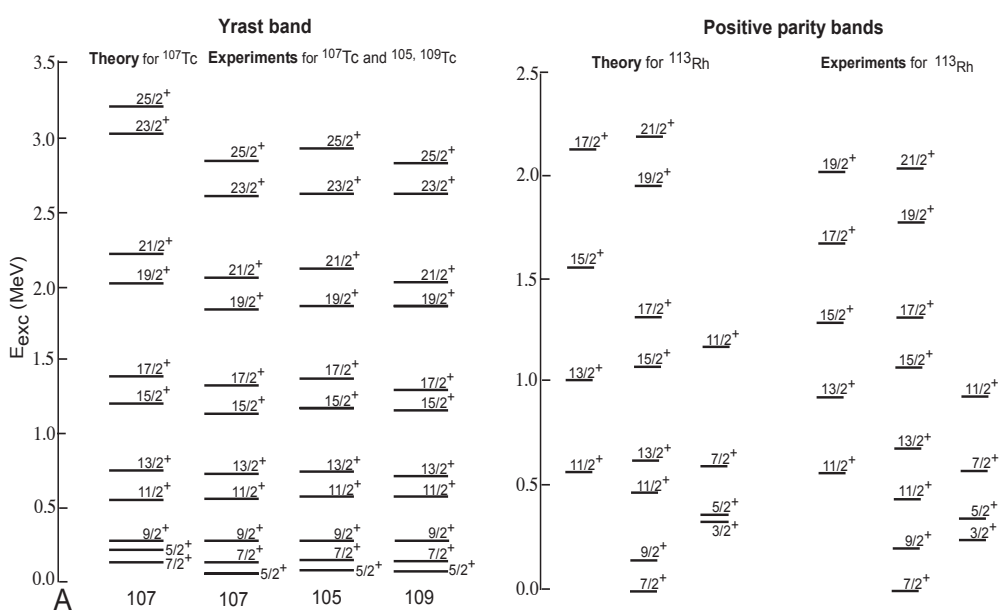
[4] J.K. Hwang, *et al.*, Phys. Rev. C**65,** 054314 (2002).