

Physics Division Heavy Ion Discussion

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“Non-collective structures at low spin in $^{166,168}\text{Os}$ ”

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Neutron-deficient osmium isotopes exhibit a variety of different phenomena with changing neutron number. Near neutron the mid-shell the nuclei are prolate with $E(4^+)/E(2^+)$ ratio close to the rotational limit 3.3. The excitation energies of the first yrast states increase and the collectivity decreases with decreasing neutron number enabling shape coexistence in ^{172}Os . When approaching the neutron shell closure the shape of the nuclei become spherical. In ^{164}Os the energy ratio $E(4^+)/E(2^+)$ has reached the vibrational limit 2.0.

The transitional nuclei $^{166,168}\text{Os}$ have been studied in detail in the Accelerator laboratory at the University of Jyväskylä. From the excitation energies of the first states they are expected to be triaxial. The measured lifetimes and the deduced transition probabilities between low-spin states exhibit unusually low collectivity for nuclei not situated at shell closures.

The combination of the gamma-ray spectroscopy with lifetime measurements will be presented and the low collectivity of the gamma-ray transitions will be discussed.