

TRANSITION PROBABILITY MEASUREMENTS IN OS-168

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Dramatic differences in the structure of neutron-deficient osmium isotopes have been observed as a function of decreasing neutron number. Near the neutron mid shell, the nuclei exhibit rotational prolate characteristics in their level energies. Beyond that the collectivity decreases with decreasing neutron number and the shape coexistence sets in at Os-172. When approaching the shell closure at $N=82$, the shape of the nuclei is expected to become spherical and indeed such development is observed.

The nucleus Os-168, which lies between the rotational and vibrational Os nuclei, has been studied in detail at the Accelerator laboratory of the University of Jyväskylä. In particular, the lifetimes of the excited states have been measured with the recoil distance Doppler-shift method following a heavy-ion induced fusion-evaporation reaction and by utilizing selective tagging methods. The gamma-rays have been recorded with the JUROGAM II gamma-ray spectrometer that is combined with the RITU recoil separator. The Köln plunger device was installed at the target position of JUROGAM II. The transition probabilities between low-spin states in Os-168 exhibit an unusual phenomenon, in which the experimental $B(E2)$ values differ considerably from any theoretical model. The results will be discussed within different theory frameworks and compared with the typical nuclear structure derived for the nuclei in this region of the nuclear chart.