

Evidence for shape coexistence in ^{120}Sn from the first 0_3^+ lifetime measurement

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The intruder bands in the mid-shell Sn isotopes, built on the proton 2p-2h excitation across the $Z = 50$ shell gap, are well-known examples of shape coexistence, where more than one shapes appear within the same nucleus. Spectroscopic signatures for shape coexistence include enhanced $E0$ transitions between the 0^+ band heads. However, until now, lifetime information for the 0^+ states in ^{120}Sn has been incomplete. The first measurement of the 0_3^+ lifetime in ^{120}Sn using the fast-timing technique following thermal-neutron capture will be presented in this talk. The first $\rho^2(E0; 0_3^+ \rightarrow 0_2^+)$ value obtained from this experiment, which is sensitive to the deformation and mixing between the 0^+ states, will be discussed.

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