

Internal conversion coefficient measurements of TSD Bands in ^{167}Lu

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The search for stable triaxial-deformed nuclei, rather than gamma-soft nuclei, has been ongoing for many years. Despite many experiments and much theoretical effort a unique signature for stable triaxial deformation has until very recently proved elusive. Recently, however, evidence has been found of the long predicted wobbling mode, which is a definitive signature of a stable triaxial nuclear shape. The experimental evidence consists of pairs of triaxial strongly deformed bands (TSD) in ^{163}Lu , ^{165}Lu , and ^{167}Lu , which show many of the characteristics expected of the wobbling mode, including strong inter-band linking transitions from the $n=2$ to $n=1$ band of primarily E2 character. These special TSD band-sets in Lu nuclei form a subset of a much larger island of TSD bands extending throughout the mass $A \sim 170$ Lu and Hf region. In an attempt to confirm the E2 character of the inter-band linking transitions internal conversion coefficients have been measured for transitions in both normal deformed and triaxial strongly deformed bands in ^{167}Lu using the Gammasphere and ICE Ball spectrometers. The results for all in-band transitions are consistent with E2 multipolarity. An upper limit for the internal conversion coefficients for linking transitions between TSD Band 2 and TSD Band 1, the $n=1$ and $n=0$ wobbling bands respectively, was also set.