Structural evolution in the A≈100 region

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The mass A≈100 region above the N=52 shell closure is well-known for its richness in structure, and structural changes. Due to the proximity of the major N,Z=50 shells, as well as the Z=38,40 sub-shell closures, there is strong competition between microscopic and collective degrees of freedom, a challenge for nuclear models of both types that allows to get insight on the intersection of both. Very different structural evolution paths occur within a very small region - from fast onsets of deformation (e.g., Zr, Sr, Mo chains) to rather gradual development in neighboring chains , i.e. Ru and (as recently revealed) the Kr isotopic chain [1, 2]. The available data in this region allowed us to develop a plunger technique for the simultaneous measurement of excited state lifetimes and g factors via TDRIV (time-dependent recoil-into-vacuum), which we referred to as the g-Plunger technique [3]. High-precision lifetimes yielded by g-Plunger measurements complement our picture of structural evolution in Ru isotopes [4], challenge literature values of g factors in Pd isotopes, and establish the effect of configurational isospin polarization in Zr isotopes [5, 6, 7], relating to the onset of collective proton-neutron symmetric and mixed-symmetric states [8]. First recent results in the Mo isotopic chain give hint to the structural evolution of mixed-symmetry states from spherical to deformed nuclei. This work is supported by U.S.DOE under grant no. DE-FG02-91ER40609.

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