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Shape Coexistence in Transitional Nuclei[1] W.D. KULP, Georgia Institute of Technology, P. SCHMELZENBACH[2], Oregon State University, J.L. WOOD, J.M. ALLMOND, Georgia Institute of Technology, K.S. KRANE, J. LOATS, C.J. STAPELS, Oregon State University, E.B. NORMAN, Lawrence Berkeley National Laboratory — The "transitional" nuclei near $N = 90$ have long been a focus of experimental and theoretical investigations. We report on a program of study of the $N = 90$ and $N = 88$ nuclei with a focus on the structure of ^{150}Sm elucidated through new high-statistics, precision γ-ray coincidence spectroscopy and $\gamma - \gamma$ angular correlation data from the radioactive decay of ^{150}Pm ($T_{1/2} = 2.68$ h, $Q^- = 3454$ keV, $J^\pi = 1^-$) and ^{150m,g}Eu ($T_{1/2} = 12.8$ h, $J^\pi = 0^-$ and $T_{1/2} = 36.9$ y, $J^\pi = 5^{(-)}$, respectively, Q^+(g.s.) = 2261 keV). In particular, very weak key collective transitions (e.g., the $2_2^+(1046) \rightarrow 4_1^+(773)$ 272 keV γ ray) are observed and precision $\delta(E2/M1)$ mixing ratios are extracted (determining $\Delta J = 0$ transitions). This data, when combined with published results from conversion electron measurements, two-neutron transfer studies, and Coulomb excitation supports the results from detailed multiple-spectroscopy studies of ^{152}Sm [1] indicating that shape coexistence underlies the structure at $N = 88, 90$. [1] W. D. Kulp, et al., arXiv:0706.4129 [nucl-ex].

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[2]Present address: Point Loma Nazarene University

W. D. Kulp
Georgia Institute of Technology

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