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Nuclear Structure of $^{101}$Pd  N.S. BADGER, D.A. MEYER, Rhodes College, A. HEINZ, R.J. CAPERSON, B. HUBER, WNSL, Yale University, J.D. LEBLANC, Rhodes College, R. LUTTKE, WNSL, Yale University; TU Darmstadt, E.A. MCCUTCHAN, Argonne National Lab, J. QIAN, WNSL, Yale University, B. SHORAKA, WNSL, Yale University; University of Surrey, J.K. SMITH, Rhodes College, J.R. TERRY, H. AI, WNSL, Yale University, J.L. HUGON, Rhodes College, E. WILLIAMS, WNSL, Yale University — $^{101}$Pd lies in a region of nuclei where $A \approx 110$ and structural changes from vibrational to rotational are significant. In order to examine the nuclear structure of $^{101}$Pd, an experiment was performed at the Wright Nuclear Structure Laboratory at Yale University using the ESTU-1 Tandem Van de Graaff Accelerator. A beam of 70 MeV $^{12}$C collided with $^{92}$Zr target nuclei to produce $^{101}$Pd via the $^{12}$C + $^{92}$Zr → $^{101}$Pd + 3$n$ reaction. Emitted $\gamma$-rays were detected by the SPEEDY array consisting of eight Compton-suppressed HPGe clover detectors. Then, $\gamma - \gamma$ coincidence measurements were made using RadWare to analyze the data. We were able to confirm many energy levels and observe several new ones. Also, new inter-band connections have been discovered. The structure of $^{101}$Pd was then interpreted using the strictly empirical E-GOS (E-Gamma Over Spin) method. The E-GOS plot, created by graphing energies of $\gamma$-rays over spin versus spin, revealed a clear transition from vibrational structure to rotational structure.

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