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Investigation of 0^+ States in the Transitional Nucleus ^{108}Pd CHRISTOPHER LAMBIE-HANSON, R. WINKLER, A. HEINZ, R.F. CASTEN, J. QIAN, Yale University, R. KRUECKEN, T. FAESTERMANN, H.F. WIRTH, R. GRAEGER, Technical University Munich, S. CHRISTEN, University of Cologne — A (p,t) reaction on a ^{110}Pd target at the MLL (Maier-Leibnitz Laboratory at LMU and TU Munich) MP tandem accelerator laboratory was used to populate excited 0^+ states of ^{108}Pd, which lies in the transitional region between spherical and deformed nuclei. A Q3D spectrometer separated the components of the reaction products according to their energies. The angular distributions of the population cross sections of excited states along with their relative energies were used to assign spin, parity, and excitation energy. The unique shape of the angular distributions of 0^+ states allowed the identification of both previously known and previously unknown 0^+ states in ^{108}Pd at and below the excitation energy of 3.5 MeV. The study of these excited states will lead to a greater understanding of collective behavior and nuclear deformation. This experiment extends previous research into the nature of 0^+ excitations in deformed and transitional nuclei in the rare earth region to a transitional nucleus of lower mass. Experimental results and details of data analysis will be presented. This work was supported by DOE Grant DE-FG02-91ER-40609.

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