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Investigation of low-spin states in Gd nuclei following (p,t) and (p, d) reactions KRISTEN GELL, CORNELIUS BEAUSANG, ERIN GOOD, RICHARD HUGHES, TIMOTHY ROSS, THOMAS TARLOW, None — The low to medium spin structures of a variety of Gd nuclei with N ~ 90 were studied following the 154,155,158 Gd(p, d) and (p, t) reactions. The 27 MeV proton beam was provided by the 88-Inch Cyclotron at LBNL. The Silicon Telescope Array for Reaction Studies (STARS) was utilized to detect the outgoing charged particles (providing both reaction selectivity and excitation energy in the residual nucleus) while the clover Ge detectors of the Liberace array measured coincident gamma-rays. Using the energies of known directly populated states in Gd nuclei, the charged particle spectra were internally calibrated. In addition, the data was analyzed in order to determine which energy states in the respective nuclei were directly populated. Furthermore, angular distributions of gamma-rays emitted from $^{154Gd}(p,t-\gamma)$ were studied in order to make spin assignments to levels directly populated by the reactions. The next step in this research will be to further refine spin assignments and to measure the relative cross sections for direct population. This work was partly supported by the US Department of Energy via grant numbers DE-FG52-09NA29454 and DE-FG02-05-ER41379.

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