

Abstract Submitted
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Spin- and Parity-Dependent Shell Model Nuclear Level Densities for Medium-Mass Nuclei¹ MIKE SCOTT, MIHAI HOROI, Department of Physics, Central Michigan University, Mount Pleasant, MI 48859 — The spin- and parity-dependent nuclear level density (SPNLD), $\rho(E_x, J, \pi)$, is an important element in the description of highly excited nuclei, and it is used to predict the nuclear reactions rates necessary for understanding the nucleosynthesis. Using the methods of statistical spectroscopy, we have developed a method for obtaining the SPNLD using the first two spin-projected moments of the Hamiltonian for each configuration of nucleons. We compare the results of this method with the results of the shell model, whose direct diagonalization approach quickly loses its feasibility, for nuclei in the pf model space and in the f5/2pg9/2 model space. Potential implications for reactions cross sections of nuclei in the rp-path will be discussed.

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