

Abstract Submitted  
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**High Performance Algorithm for Non-Spurious Spin- and Parity-Dependent Nuclear Level Density**<sup>1</sup> ROMAN SENKOV, MIHAI HOROI, Department of Physics, Central Michigan University, Mount Pleasant, MI 48859 — A new algorithm for calculating the spin- and parity-dependent shell model nuclear level densities using the moments method in the proton-neutron formalism was recently proposed. The algorithm was further improved to eliminate the spurious center-of-mass contributions from the level density. We will show results for some medium-mass nuclei and compare with exact shell model nuclear level density. The method can also be used to extract with good precision the ground state energy for very large shell model cases. Some application of the new algorithm to reaction rates for nuclei in the rp-process path will be presented.

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