

Abstract Submitted
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Exact removal of the center-of-mass spurious states from level density¹ MIHAI HOROI, Department of Physics, Central Michigan University, Mount Pleasant, MI 48859 — We present recursive formulae to exactly remove the contribution of the center-of-mass spurious states from the fixed-J and parity shell model nuclear level density, if one knows the level density for restricted classes of shell model configurations. The method is valid for a large class of problems that use a harmonic oscillator shell model basis and translational invariant shell model Hamiltonians. Using our methods for calculating nuclear level densities based on fixed-J configuration centroids and widths for restricted classes of shell model configuration (see e.g. M. Horoi et al, Phys. Rev. C **69**, 041307(R) (2004)), such as $N\hbar\omega$ excitations, one can calculate very accurately nuclear level densities free of center-of-mass spurious states.

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Mihai Horoi
Central Michigan University, Mount Pleasant, MI 48859

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