

Generalized seniority for the shell model with realistic interactions

Mark A. Caprio
Department of Physics
University of Notre Dame

The generalized seniority scheme has long been proposed as a means of dramatically reducing the dimensionality of nuclear shell model calculations, when strong pairing correlations are present. Generalized seniority is also of interest in that it provides the foundation for the conventional approach to mapping the nuclear shell model onto the interacting boson model. However, systematic benchmark calculations are required, comparing results obtained in a model space truncated according to generalized seniority with those obtained in the full shell model space, to assess the viability of generalized seniority as a practical truncation scheme for the shell model. In this talk, the results of such a detailed comparison will be described, for semimagic nuclei taken in a full major shell (*pf*) and with realistic interactions.

This work was supported by the Research Corporation for Science Advancement under a Cottrell Scholar Award and by the US Department of Energy under Grant No. DE-FG02-95ER-40934.