An Extended Pairing Model and Its Applications to Well-Deformed Nuclei

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Abstract A Nilsson mean-field plus extended pairing interaction Hamiltonian with many-pair interaction terms is summarized. The investigation shows that one- and two-body interactions continue to dominate the dynamics for relatively small values of the pairing strength. As the strength of the pairing interaction grows, however, higher many-body interaction terms grow in importance. As an example, numerical fits to even-odd mass differences in the $^{154-171}$Yb isotopes shows that the new model is applicable to well-deformed nuclei.

Key words pairing interaction, exact solution, well-deformed nuclei, even-odd mass difference

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