SU(3) Realization of the Pairing-plus-Quadrupole Model in Two Oscillator Shells

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An extended pairing-plus-quadrupole model, realized in the framework of the Elliott SU(3) scheme, is used to study the combined effects of the quadrupole-quadrupole, pairing, and single-particle interactions on energy spectra and ground state shapes of nuclear systems. The pairing part of the Hamiltonian consists of pp-, nn- and pn-pairing terms and terms describing the pair-scattering between two oscillator shells. Results for nuclei of different mass are calculated for reasonable choice of values for the interaction parameter strengths. We propose the build up of a refined version of the model based on existing good (pseudo-) SU(3) symmetry.