RPA in superfluid nuclei[*]

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Investigations of nuclei far from stability are presently at the forefront of nuclear science. Nuclear Energy Density Functional Theory is an important tool for a theoretical description of medium heavy and heavy systems. The time-dependent version leads in the small amplitude limit to RPA. We discuss several aspects of applications in finite nuclei, such as deformation [1], superfluidity [2], proton-neutron RPA [3], exchange terms [4], treatment of the continuum and resonances [5], the Dirac sea in relativistic models [6], and finally methods to go beyond RPA by the coupling of surface phonons [7].

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