

Real-time calculation of response function with TDHF+BCS

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We present a theoretical study of nuclear response using a method that is applicable to systems from light to heavy nuclei systematically; The real-time calculation of the time-dependent Hartree-Fock+BCS(TDHF+BCS) in the 3-dimensional mesh representation. The method is a simple extension of the well-known TDHF method but is able to describe various responses of deformed nuclei with pairing effects. We show results of our first application to isoscalar monopole and quadrupole modes of excitation for even-even nuclei restricted to $N=Z$, from Carbon 12 to Zinc 60. Coupling between monopole and quadrupole giant resonances in deformed nuclei is clearly seen in our systematic analysis of the monopole resonance.

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