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RPA calculations with Gaussian expansion method HITOSHI NAKADA, Chiba University, KAZUHITO MIZUYAMA, University of Jyvaskyla, MASAYUKI YAMAGAMI, University of Aizu, MASAYUKI MATSUO, Niigata University — The Gaussian expansion method (GEM) is applied to the calculations in the random-phase approximation (RPA). We adopt the mass-independent basis-set that has been tested in the mean-field calculations. The RPA results by the GEM are compared with those obtained by several other available methods in Ca isotopes, using a density-dependent contact interaction and the Woods-Saxon single-particle states. It is confirmed that energies, transition strengths and widths of their distribution are described by the GEM to good precision, for the 1^-, 2^+ and 3^- collective states. The GEM is then applied to the self-consistent RPA calculations with the finite-range Gogny D1S interaction. The spurious center-of-mass motion is well separated from the physical states in the $E1$ response, and the energy-weighted sum rules for the isoscalar transitions are fulfilled reasonably well.

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