Finite amplitude method for discrete collective excited states and sum rules NOBUO HINOHARA, Center for Computational Sciences, University of Tsukuba, MARKUS KORTELAINEN, University of Jyvaskyla, WITOLD NAZAREWICZ, ERIK OLSEN, University of Tennessee — The finite amplitude method (FAM) is one of the new efficient iterative methods for solving the QRPA problem, based on the linear response theory. The original FAM equations are solved with a small imaginary width introduced to the QRPA energy, and, up to present, its direct application to discrete excitations has not been fully accomplished. To this end we proposed a new formulation of the FAM using the contour integration technique. We show that the discrete QRPA amplitudes and energies can be expressed by means of contour integration around the QRPA poles in a complex-energy plane. We then discuss the contour integral formulation for the QRPA sum rules needed to constrain modern energy density functionals.

Nobuo Hinohara
Center for Computational Sciences, University of Tsukuba

Date submitted: 01 Jul 2014   Electronic form version 1.4