A method to compute the QRPA PAOLO AVOGADRO, TAKASHI NAKATSUKASA, RIKEN — We introduce the finite amplitude method (FAM) for the QRPA. This method allows to build fully self consistent QRPA codes; since the FAM method is not limited to spherically symmetric systems it is helpful in the solution of the deformed QRPA problem where the construction of the matrices is a difficult task in itself. All that is needed to write a QRPA code with the FAM method is a HFB code; the residual fields ($\delta h(\omega)$, $\delta h^\dagger(\omega)$, $\delta\Delta(\omega)$ and $\delta\Delta^\dagger(\omega)$), which usually are the difficult part to be calculated, are computed with a numerical derivation which requires the quasi-particle amplitudes previously obtained with the HFB code and the QRPA amplitudes. The FAM method is not involved in the diagonalization of the QRPA matrices, a task which can be solved via iterative methods (like the Conjugate Gradient Method).

[1] T. Nakatsukasa, T. Inakura and K. Yabana: Phys. Rev. **C 76** 024318 (2007)

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