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# RPA correction to the optical potential

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## Résumé

This work is dedicated to a microscopic derivation of the optical potential involved in nucleon elastic scattering studies, in the case of doubly closed-shell target nuclei and generally to nuclei well described by the random phase approximation (RPA). We use the so-called "nuclear structure approach" developed by Vinh Mau and Bouyssy. First, we present results for a calculation using the Gogny force consistently to generate both the real Hartree-Fock term and the complex RPA term of the microscopic optical potential (MOP). Then we present the results obtained adding the RPA potential to the one obtained from g-matrix calculations (Melbourne and Santiago). The MOP is non-local complex and energy dependent. The integro-differential Schrödinger equation corresponding to the scattering problem is solved without any localization procedure. Illustrations are given for proton and neutron scattering from 40 Ca and 208 Pb.

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