

P8 – Static correlation in the Faddeev Random Phase Approximation

Matthias Degroote

Center for Molecular Modelling, Ghent University

The Faddeev Random Phase Approximation (FRPA) is a Green's function method which couples collective degrees of freedom to the single particle motion by resumming an infinite number of Feynman diagrams. The Faddeev technique is applied to describe the two-particle-one-hole (2p1h) and two-hole-one-particle (2h1p) states in terms of Random Phase Approximation (RPA) phonons. The resulting self-energy is exact up to third order and ensures the equal treatment of the intermediary particle-particle (pp) and particle-hole (ph) channels. The poster will present the application of this method to molecules and will also investigate the effects of using fragmented single particle propagators in handling the RPA instability that arises in the dissociation limit.