Correcting model energies by numerically integrating along the adiabatic connection and a link to density functional theory

Andreas Savin,[1]

[1] *Laboratoire de Chimie Théorique, CNRS and UPMC Sorbonne Universités, Paris, France*

Model Hamiltonians are considered for which electrons interact via long-range forces. It is assumed that their eigenvalues can be obtained with satisfying accuracy. Extrapolation techniques using asymptotic behavior considerations provide estimates for the energy of the physical system. Results for the uniform electron gas and some two-electron systems show that very few quadrature points can already produce good quality results. Connections to the density functional theory are discussed.