Some Considerations of Electron Correlation Introduced as a Correlation Potential

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We report on our experience in trying to describe electron correlation in terms of effective one-particle potentials. The basic idea is to add such a potential to Hartree-Fock theory to establish a kind of self-consistent approach for introducing electron correlation. Important considerations pertain to how to go from the usual Koopmans' theorem approximations for Ip's and Ea's to their exact, correlated values.