Many Electron Correlated Scattering

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Simple analytical models based on ideas first present by Hulthén and Kohn for the variational calculation of phase shifts are presented for scattering in one-dimension. Conditions related to application of the method for a system of non-interacting electrons with reservoirs allowing ‘left’ and ‘right’ moving electrons is introduced. A method for applying open boundary conditions consistent with the scattering solutions being expressed locally as square integrable wave functions is shown. By allowing the electrons to interact on a central scattering region independently of the boundary conditions for the incoming electrons, a quantum transport approach including electron-electron scattering is presented.