

Abstract Submitted  
for the MAR15 Meeting of  
The American Physical Society

**Range optimized theory of electron liquids with application to jellium** JAMES DONLEY, Valence4 Technologies, CRAIG PRYOR, University of Iowa — A simple optimization scheme is used to compute the density-density response function of the 3-D homogeneous electron gas at zero temperature. Higher order terms in the perturbation expansion beyond the random phase approximation are summed approximately by enforcing the constraint that the spin density radial distribution functions be positive. Quantitative comparison is made with previous theory and data from quantum Monte Carlo simulation. Agreement with the available simulation data is good for the entire paramagnetic region. Generalization of the theory to inhomogeneous electron liquids such as in semiconductors will be discussed.

James Donley  
American Physical Society APS

Date submitted: 07 Nov 2014

Electronic form version 1.4