

Recent advances in tensor-product representation of correlation in the electron gas

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Using our recently introduced algebraic framework[1], we explore a number of computationally feasible approximations to the two-particle density matrix as a finite sum of tensor products of single-particle operators. We compare and contrast the performance of these approximations in the context of the uniform electron gas, an important limit for solid state calculations. We present the first natural-orbital functional which even *qualitatively* reproduces the momentum distribution for the electron gas at densities typical of condensed matter systems.

[1] Phys. Rev. B **61**, 7348-7352 (2000)