Abstract Submitted
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Self-consistent solution for the Hubbard model at the two-particle and one-particle level using the parquet formalism.[1] HERBERT FOTSO, SHUXIANG YANG, JUN LIU, MARK JARRELL, University of Cincinnati, EDUARDO D'AZEVEDO, THOMAS MAIER, Oak Ridge National Laboratory, KAREN TOMKO, Ohio Supercomputer Center, RICHARD SCALETTAR, University of California - Davis — The parquet Formalism is used to solve self-consistently, both at the one-particle and at the two-particle levels, the Hubbard model on a 2-D square lattice. The parquet equation and the Bethe-Salpeter equation are combined into one Newton fixed point problem which is then solved by taking advantage of the existing linear solvers such as GMRES and BiCGStab. Some quantities of interest are calculated and the results are compared to those of Determinental Quantum Monte Carlo (DQMC). We also discuss the importance of this work in the multiscale treatment of the High Tc Cuprates.

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