MAR08-2007-001294

Abstract for an Invited Paper
for the MAR08 Meeting of
the American Physical Society

Continuous time quantum Monte Carlo (CTQMC): a fast algorithm to solve the DMFT equations[1]

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Dynamical mean field calculations involve the repeated numerical solution of an impurity problem, which is the time critical step in the self-consistency loop. The performance and flexibility of available impurity solvers therefore defines what type of problems can be treated within dynamical mean field theory. Over the past few years, significant progress has been achieved with the development of so-called continuous- time quantum Monte Carlo methods. These algorithms are based on a diagrammatic expansion of the partition function in either the interactions or hybridizations, and the stochastic sampling of appropriate collections of diagrams. I will explain the key ideas behind this powerful and versatile approach, with a particular emphasis on the expansion in hybridization.

[1]Support from NSF DMR 0431350