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Comparing new approaches for the real and imaginary time evolution of the Hubbard model MICHAEL MOECKEL, University of Cambridge — Recent advances in the experimental realization and theoretical simulation of fermionic many-body systems have motivated new interest in the Hubbard model both under real and imaginary time evolution. The possibility to follow the dynamics of excited states in cold quantum gases loaded on optical lattices [1] allows to observe relaxation behavior of the Hubbard model under the influence of nonadiabatic parameter changes. On the other hand, initiator full configuration interaction quantum Monte Carlo (iFCIQMC) provides a promising new approach to an efficient sampling of the Hilbert space based on a mapping of imaginary time evolution onto a population dynamics in Slater determinant space [2]. Since characteristic features of the Hubbard model like time scale separation and long time transient behavior [3] become visible in both approaches I provide a comparison of related results.

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