

Abstract Submitted  
for the MAR10 Meeting of  
The American Physical Society

**Diagrammatic Monte Carlo for Correlated Fermions** EVGENY KOZIK, ETH Zurich, KRIS VAN HOUCKE, University of Massachusetts Amherst / Universiteit Gent, EMANUEL GULL, Columbia University, LODE POLLET, University of Massachusetts Amherst / Harvard University, NIKOLAY PROKOF'EV, BORIS SVISTUNOV, University of Massachusetts Amherst, MATTHIAS TROYER, ETH Zurich — We show that Monte Carlo sampling of the Feynman diagrammatic series (DiagMC) can be used for tackling hard fermionic quantum many-body problems in the thermodynamic limit by presenting accurate results for the repulsive Hubbard model in the correlated Fermi liquid regime. Sampling Feynman's diagrammatic series for the single-particle self-energy we can study moderate values of the on-site repulsion ( $U/t \sim 4$ ) and temperatures down to  $T/t = 1/40$ . We compare our results with high temperature series expansion and with single-site and cluster dynamical mean-field theory.

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Date submitted: 20 Nov 2009

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