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Phase Diagram of the 2D Fermionic Ring Exchange Only Model KATHARINE HYATT, Univ of California - Santa Barbara, BRYAN K. CLARK, Kavli Institute of Theoretical Physics, University of California at Santa Barbara; Physics Department, University of Illinois at Urbana Champaign., MATTHEW P.A. FISHER, Kavli Institute of Theoretical Physics, University of California at Santa Barbara — There has been significant interest in understanding non-Fermi liquid phases. Recently, DMRG studies on 2-leg ladders have suggested the presence of such a phase (the d-wave metal) in the t-J-K model on a 2D square lattice, where K is a nearest neighbor ring exchange term. The fermion sign problem generically prevents Monte Carlo studies of this model on larger systems. However, in the t=J=0 limit, the Hamiltonian becomes sign free. Using Green's function Monte Carlo, we investigate the phase diagram of this ring-exchange only fermionic model as a function of density. In this talk, we report our findings.

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