Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Emergence of long distance pair coherence through incoherent local environmental coupling JEAN-SEBASTIEN BERNIER, Department of Physics and Astronomy, University of British Columbia, PETER BARMETTLER, Departement de Physique Theorique, Universite de Geneve, DARIO POLETTI, Singapore University of Technology and Design, CORINNA KOLLATH, Departement de Physique Theorique, Universite de Geneve — We demonstrate that the interplay between a purely local incoherent environmental coupling, effectively heating up the system, and Hamiltonian dynamics generates quantum coherence. For a repulsively interacting fermionic lattice gas initially prepared in a Mott insulating state, coupling a noise field to the local spin density produces coherent fermionic pairs. We show that the formation of pair coherence is approximately diffusive with distance, and is experimentally observed in the pair momentum distribution as the formation of a sharp feature at the zone boundary.

Jean-Sebastien Bernier
Department of Physics and Astronomy, University of British Columbia

Date submitted: 09 Nov 2012 Electronic form version 1.4