

Abstract Submitted  
for the MAR11 Meeting of  
The American Physical Society

**Disorder effects on pair binding in the checkerboard Hubbard model** PETER SMITH, MALCOLM KENNETT, Simon Fraser University — The checkerboard Hubbard model is an inhomogeneous fermionic Hubbard model in which hopping on plaquettes takes a different value to hopping between plaquettes. The pair binding energy in the clean checkerboard Hubbard model, interpreted as a tendency towards superconducting order, is positive over a wide part of the zero temperature phase diagram. We perform exact diagonalization studies of the checkerboard Hubbard model with on-site disorder. For systems up to twelve sites, we study the distribution of pair binding energies that results from the introduction of potential disorder and find that weak disorder enhances the region of the phase diagram over which there is a non-zero probability of pair binding, without greatly changing the average pair binding energy. We also study how stronger disorder destroys pair binding.

Peter Smith  
Simon Fraser University

Date submitted: 18 Nov 2010

Electronic form version 1.4