Robustness of superconducting tendencies to disorder in the checkerboard Hubbard model[1] MALCOLM KENNETT, Simon Fraser University, PETER SMITH, Simon Fraser University, Fraser International College — The question of whether spatially inhomogeneous hopping in the two dimensional Hubbard model can lead to enhancement of superconductivity has been tackled by a number of authors in the context of the checkerboard Hubbard model (CHM). We address the effects of disorder on superconducting properties of the CHM by using exact diagonalization calculations for both potential and hopping disorder. We characterize the superconducting tendencies of the model by focusing on the pair binding energy, the spin gap, and d-wave pairing order parameter. We find that superconducting tendencies, particularly the pair binding energy, are more robust to disorder when there is inhomogeneous hopping than for the uniform Hubbard model.

Malcolm Kennett
Simon Fraser University

Date submitted: 13 Nov 2013   Electronic form version 1.4