

Abstract Submitted  
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**Inhomogeneity and d-wave superconductivity in the Hubbard model**<sup>1</sup> S. CHAKRABORTY, D. SÉNÉCHAL, A.-M.S TREMBLAY, Dept. de physique, RQMP, Sherbrooke — Whether or not inhomogeneity plays a significant role in determining the superconducting properties of the cuprate high-T<sub>c</sub> superconductors remains an open issue, in spite of extensive theoretical and experimental focus. To this end, we study d-wave superconductivity in the checkerboard Hubbard model on a square lattice. We employ the Cellular Dynamical Mean Field theory method with an exact diagonalization solver at zero temperature. The d-wave order parameter is computed for various inhomogeneity levels over the entire doping range of interest. We find a monotonic decrease in the maximum amplitude of the superconducting order parameter with inhomogeneity. However, the order parameter increases with inhomogeneity in a small doping interval lying in the extreme overdoped regime. For any doping, an inhomogeneity-induced change in the height of the lowest energy peak in the antiferromagnetic spin susceptibility correlates with the change in amplitude of the order parameter.

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