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Two-dimensional s-wave Superconductivity for Different Pairing Patterns KARAN ARYANPOUR, Department of Physics, University of California, Davis , RICHARD. T. SCALETTAR TEAM[1], THEREZA. C. DE LACERDA PAIVA TEAM[2], WARREN. E. PICKETT TEAM[3] — Various electron spectroscopies (STM, Xray) have observed electronic inhomogeneities in HTS materials in the form of stripes or checkerboard patterns. We study $2D$ s-wave superconductivity by employing the two-dimensional attractive Hubbard Hamiltonian. Different patterns for the distribution of the interacting lattice sites including random, stripes and checkerboard lead to different superconducting or insulating phases under the variation of the interaction strength and doping. The Hamiltonian for this problem can be mapped onto an effective bilinear form using the Bogolibov-de Gennes mean field approximation. Stripes and checkerboard patterns under different dopings and interaction strengths correspond to larger order parameters compared to the random pattern. For the case of the half-filled stripes, our preliminary results also indicate the destruction of superconductivity at large values of interaction due to the formation of a charge density wave (CDW) long range order.

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