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Enhancement of superconductivity in a striped 2D Hubbard model THOMAS MAIER, GONZALO ALVAREZ, MICHAEL SUMMERS, Oak Ridge National Laboratory, THOMAS SCHULTHESS, ETH Zurich — Recent photoemission and transport measurements have shown that superconductivity in some respects is optimized in the striped state at 1/8 doping in LaBaCuO. To understand this phenomenon, we use dynamic cluster quantum Monte Carlo simulations to study the superconducting behavior of a 1/8 doped two-dimensional Hubbard with imposed uni-directional stripe-like charge modulation. Consistent with experiments, we find a significant increase of the pairing correlations and critical temperature relative to the homogeneous system when the modulation length-scale is sufficiently large. Using a separable form of the irreducible particle-particle vertex, we find that a delicate balance between the modulation enhanced pairing interaction, and modulation reduced hole-mobility is found to result in optimized superconductivity for moderate modulation strength.

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