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Ginzburg-Landau Theory of multi-component order parameter in the cuprate pseudo-gap regime LAIMEI NIE, Stanford University, SUBIR SACHDEV, Harvard University, STEVEN KIVELSON, Stanford University — We study a Landau-Ginzburg-Wilson effective field theory of a quasi-2D system with potential disorder in which incommensurate charge-density wave and superconducting orders are intertwined. The model is shown to exhibit a rich phase diagram at a large-N mean-field level, where both superconducting and nematic, but not charge-density wave order, can persist in the presence of the quenched disorder. We select three representative sets of input parameters and compute the corresponding CDW structure factors. Where nematicity and SC coexist, the peak height of the CDW structure factor decreases monotonically as a function of increasing T, unlike what is seen in X-ray experiments in YBCO. In the parameter regime where no nematic phase occurs, we compute to one-loop order the nematic correlation length, which is shown to be much shorter than CDW correlation length.

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