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Distinguishing Patterns of Charge Order in 2 dimensions; Stripes or Checkerboards JOHN ROBERTSON, STEVEN KIVELSON, AHARON KAPITULNIK, Stanford University, EDUARDO FRADKIN, University of Illinois at Urbana-Champaign — Charge ordered states are common in strongly correlated materials, including especially the cuprate high temperature superconductors. Identifying where such phases occur in the phase diagram, and where they occur as significant fluctuating orders is a critical step in understanding what role they play in the physics. However, the both the presence of quenched disorder, and the smallness of the charge modulations make the detection of such order difficult in experiments. We discuss strategies for identifying the nature of the underlying “clean” order (such as “stripes” or “checkerboards”) in experiments, particularly in STM. We use a model of an effective Hamiltonian in the presence of quenched disorder to simulate experimental data, and further apply our techniques to real experimental data.

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