

Abstract Submitted  
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**Checkerboard Pattern Formation in a Quasiclassical Model of Superconducting Transition Metal Oxides** CYNTHIA OLSON REICHHARDT, CHARLES REICHHARDT, ALAN BISHOP, Los Alamos National Laboratory — Using numerical simulations of a quasiclassical model for holes in transition metal oxides, we analyze the thermal fluctuations of off-lattice particles that have a short-range dipolar attraction and a long-range repulsion. In an inhomogeneous particle density region, or "soft phase," filamentary patterns appear which are destroyed only at very high temperatures. The filaments act as a fluctuating template for correlated percolation in which low-energy excitations can move through the stable pattern by local rearrangements. At intermediate temperatures, dynamically averaged checkerboard states appear. We discuss possible implications for doped cuprate oxides and related materials. [1] C.J. Olson Reichhardt, C. Reichhardt, and A.R. Bishop, Phys. Rev. Lett. 92, 016801 (2004).

Cynthia Olson Reichhardt  
Los Alamos National Laboratory

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