## Abstract Submitted for the MAR05 Meeting of The American Physical Society

Floating phase in a dissipative Josephson junction array SUMANTA TEWARI, University of Maryland, College Park, JOHN TONER, University of Oregon, SUDIP CHAKRAVARTY, University of California, Los Angeles — We consider dissipative quantum phase transitions (QPT) in Josephson junction arrays and show that the disordered phase in this system can be viewed as an unusual floating phase in which the states of local (0 + 1)-dimensional elements (single Josephson junctions) can slide past each other despite arbitrary range spatial couplings among them. While the order parameters on the grains are long-rangecorrelated in time, they are only short-range-correlated spatially. The dissipative QPT between this unusual floating phase, which is metallic, and a global superconductor is controlled by a locus of critical points determined entirely by the *local* topology of the lattice, and hence exists in arbitrary dimension. The unusual character of this phase transition can be tested by measurements of the current voltage characteristics.

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