

Abstract Submitted
for the OSS08 Meeting of
The American Physical Society

Superconducting to Insulating Phase Transition in Current-Biased Josephson Junction Arrays C.D. PORTER, D. STROUD, Department of Physics, The Ohio State University — We present a variational approach to treat the metastable superconducting state in an array of small Josephson junctions driven by an applied current. The approach is a generalization of one previously used to treat such an array at zero applied current. We find that, for a given array, a superconducting to non-superconducting transition can be achieved as a function of applied current, or by varying the direction of the applied current at fixed magnitude. This transition can be observed for a wide range of junction parameters including the range in which single junctions are tuned to be two-level systems.

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Date submitted: 11 Mar 2008

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