Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Josephson junction array protected from local noises. SERGEY GLADCHENKO, DAVID OLAYA, EVA DUPONT-FERRIER, Rutgers University, BENOIT DOUCOT, Universités Paris 6 et 7, Paris, France, LEV IOFFE, MICHAEL GERSHENSON, Rutgers University — We have developed small arrays of Josephson junctions (JJs) that can be viewed as prototypes of superconducting qubits protected from local noises [1]. The array consists of twelve superconducting loops interrupted by four sub-micron JJs. The protected state is realized when each loop is threaded by half of the magnetic flux quantum. It has been observed that the array with the optimized amplitude of quantum fluctuations is protected against magnetic flux variations well beyond linear order, in agreement with theoretical predictions [2]. 1. S. Gladchenko et al., "Superconducting Nanocircuits for Topologically Protected Qubits", arXiv:cond-mat/0802.2295, to be published in *Nature Physics.* 2. L.B. Ioffe and M.V. Feigelman, *Phys. Rev.* B **66**, 224503 (2002); B. Doucot *et al.*, *Phys. Rev.* B **71**, 024505 (2005); B. Doucot and L.B. Ioffe, *Phys. Rev.* B **76**, 214507 (2007).

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Date submitted: 07 Dec 2008 Electronic form version 1.4