

Abstract Submitted
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Vortex doping into finite-sized superconducting Pb networks.¹

TAKEKAZU ISHIDA, HIROSHI NODA, MASARU KATO, Osaka Prefecture University, Sakai, Osaka 599-8531, OSAMU SATO, Osaka Prefectural College of Technology, Neyagawa, Osaka 572-8572, MASAHIKO HAYASHI, HIROMICHI EBI-SAWA, Graduate School of Information Sciences, Tohoku University, Sendai980-8579, KAZUO SATOH, TSUTOMU YOTSUYA, Technology Research Institute of Osaka Prefecture, Izumi, Osaka 594-1157 — Superconducting finite-sized Pb square networks with 2x2, 3x3, 5x5 and 10x10 square holes have been fabricated by electron beam lithography of photoresist layer and a lift-off process after depositing Pb film on the resist patterns. The application of magnetic field corresponds to the particle (vortex) doping into networks. Vortex image observations were carried out by a SQUID microscope to compare with the theoretical predictions. We found the exactly reversed pattern between the vortex doping x and the antivortex doping x into the fully occupied network ($x=1/4$). The Ginzburg-Landau calculations show that there are several vortex configurations with almost equivalent free energy. The complete coincidence of the two patterns might be due to residual randomness caused in the fabrication processes.

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