

Abstract Submitted
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Experimental Evidence for Giant Vortex States in a Mesoscopic Superconducting Disk AKINOBU KANDA, TIMS and Institute of Physics, University of Tsukuba, BEN BAELUS, Institute of Materials Science, University of Tsukuba, and Departement Fysica, Universiteit Antwerpen (Campus Drie Eiken), FRANCOIS PEETERS, Departement Fysica, Universiteit Antwerpen (Campus Drie Eiken), KAZUO KADOWAKI, Institute of Materials Science, University of Tsukuba, YOUTI OOTUKA, TIMS and Institute of Physics, University of Tsukuba — Response of a mesoscopic superconducting disk to perpendicular magnetic fields is studied by using the multiple-small-tunnel-junction method, in which transport properties of several small tunnel junctions attached to the disk are measured simultaneously. This allows us for the first experimental distinction between the giant vortex states and multivortex states. Moreover, we experimentally find magnetic field induced rearrangement and combination of vortices. The experimental results are well reproduced in numerical results based on the nonlinear Ginzburg-Landau theory.

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