

Abstract Submitted
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Kosterlitz-Thouless phase of interlayer Josephson vortices in high-Tc superconductors QING-HU CHEN, National Institute for Materials Science, Tsukuba 305-0047, Japan and Department of Physics, Zhejiang University, Hangzhou 310027, China, XIAO HU, MASASHI TACHIKI, National Institute for Materials Science, Tsukuba 305-0047, Japan — Interlayer Josephson vortices induced by a magnetic field parallel to the CuO₂ layers are investigated by Monte Carlo and dynamical simulations based on the anisotropic, frustrated XY model. At high magnetic field and/or high anisotropy, an intermediate Kosterlitz-Thouless phase between liquid and lattice is found, which is characterized by interlayer short-range and intralayer (thus 2D) quasi long-range crystalline orders of Josephson vortex lines [1]. The I-V characteristics of current applied parallel the CuO₂ layers in this intermediate phase display nice non-Ohmic power-law behaviors [2]. It is also found that the resistivity in this geometry does not depend on the angle between the current and the magnetic field, which explains an interesting experimental observation made 15 years ago. [1] X. Hu and M. Tachiki: Phys. Rev. B, vol. 70 064506 (2004). [2] Q.-H. Chen et al., in preparation for submission.

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