Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Vortex core size due to the quasiparticle interference effect in cuprate superconductors[1] HONG-YI CHEN, National Taiwan Normal University — We investigate the vortex core properties by solving the Bogoliubov de-Gennes equations for the t-t'-U-V Hamiltonian. The double peaks structure of the local density of states at the vortex core center characterizes the vortex core state. The local density of states maps have been numerically obtained near the slightly underdoping for the energy at the vortex core state. It is found that the field induced spin-density wave would cause the vortex core shrinking as the magnetic increases. We also found that the quasiparticle interference effect would affect the vortex core shrinking that the core size is independent the strength of the applied magnetic field.

[1]NSC 101-2112-M-003-005-MY3

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Date submitted: 10 Dec 2012 Electronic form version 1.4