

Abstract Submitted
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Quasi-particle interference and vortex “checkerboard” in $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_y$ T. HANAGURI, Y. KOHSAKA, RIKEN, T. TAMEGAI, Univ. Tokyo, H. TAKAGI, RIKEN/Univ. Tokyo — Relationship between the “checkerboard” electronic-state modulation in a vortex core [1] and the quasi-particle interference effect has been studied using STM/STS in optimally-doped $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_y$. We found that the vortex-induced signals in Fourier-transform spectroscopic images appear in the close vicinity to some of the “octet” scattering vectors for the quasi-particle interference [2], suggesting that the vortex “checkerboard” is associated with the Fermi momentum. Conductance spectrum taken at the center of the vortex core shows a sharp peak at a low energy (\sim meV) in the empty state. We argue the possible relationship between these observations and the quantum-limit nature of the vortex core. [1] J. E. Hoffman *et al.*, *Science* **295**, 466 (2002). [2] K. McElroy *et al.*, *Nature* **422**, 592 (2003).

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