Abstract Submitted
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Onset field for Fermi-surface reconstruction in the cuprate superconductor $YBa_2Cu_3O_y$ GAEL GRISSONNANCHE, FRANCIS LALIBERTE, SOPHIE DUFOUR-BEAUSEJOUR, ALEXIS RIOPEL, SVEN BADOUX, MICHAEL CAOUETTE-MANSOUR, MARCIN MATUSIAK, ALEXANDRE JUNEAU-FECTEAU, PATRICK BOURGEOIS-HOPE, OLIVIER CYR-CHOINIRE, University of Sherbrooke, JAMES BAGLO, BRAD RAMSHAW, RUIXING LIANG, DOUG BONN, WALTER HARDY, University of British Columbia, STEFFEN KRAEMER, DAVID LEBOEUF, Laboratoire National des Champs Magntiques Intenses (Grenoble), DAVID GRAF, National High Magnetic Field Laboratory (Tallahassee), NICOLAS DOIRON-LEYRAUD, LOUIS TAILLEFER, University of Sherbrooke — Discovery of quantum oscillations in underdoped cuprates [1] at low temperature and high magnetic field revealed the Fermi surface to contain a small closed electron pocket. It is thought to result from a reconstruction by charge order, but whether it is the order seen by NMR [2], and ultrasound [3] above a threshold field or the short-range modulations seen by X-ray diffraction in zero field is unclear [4]. Here we report measurements of the thermal Hall conductivity in $YBa_2Cu_3O_y$ to show that Fermi-surface reconstruction occurs only above a sharply defined onset field, equal to the transition field seen in ultrasound. This reveals that electrons do not experience long-range broken translational symmetry in the zero-field ground state. [1] Doiron-Leyraud et al., Nature 447,565 (2007) [2] Wu et al., Nature 477,191 (2011) [3] LeBoeuf et al., Nat. Phys. 9,79 (2013) [4] Ghiringhelli et al. Science 337, 821-825 (2012)

Gael Grissonnanche
University of Sherbrooke

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