Abstract Submitted
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Static Magnetic Order in Underdoped $HgBa_2CuO_{4+\delta}$ YUAN LI, Stanford Univ., VICTOR BALEDENT, LLB, France, NEVEN BARISIC, Universitat Stuttgart, Germany, PHILIPPE BOURGES, LLB, France, YONGCHAN CHO, Pusan National Univ., Korea, BENOIT FAUQUE, YVAN SIDIS, LLB, France, GUICHUAN YU, Stanford Univ., XUDONG ZHAO, Jilin Univ., P. R. China, MARTIN GREVEN, Stanford Univ. — It is believed by many that understanding the pseudogap phase is essential to understanding the mechanism of high-transition-temperature superconductivity. Here we present the first experimental identification, by polarized neutron diffraction, of an exotic magnetic order in the $HgBa_2CuO_{4+\delta}$ (Hg1201), which is considered the model high-Tc material with (i) simple tetragonal structure, (ii) large spacing between the CuO_2 planes, and (iii) the highest Tc among all single-layer compounds [1]. The order parameter develops below a characteristic temperature T_{mag} that nicely agrees with the pseudogap temperature T* determined by DC transport. Our result is highly consistent with the previous work by B. Fauque *et al.* on the bi-layer compound YBCO [2], and can be interpreted within an orbital-current picture that breaks time-reversal symmetry but preserves discrete translational symmetry. The magnitude and the orientation of the magnetic moments of the current loops are experimentally investigated. 1. X. Zhao *et al.*, Adv. Mat. **18**, 3243 (2006). 2. B. Fauque *et al.*, PRL **96**, 197001 (2006).

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