Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Normal state magnetic susceptibility measurements in underdoped $YBa_2Cu_3O_{7-\delta}$ BRIGITTE LERIDON, PHILIPPE MONOD, LPEM - CNRS/ESPCI - 10 rue Vauquelin -75231 Paris cedex 05 - France, DOROTHÉE COLSON, Service de Physique de l'Etat Condensé - DSM/DRECAM - CEA Saclay - 91191 Gif-Sur-Yvette Cedex - France — Motivated by the observation of staggered magnetic moments by Fauqué *et al.* [Phys. Rev. Letters 96, 197001 (2006)] using neutron diffraction in underdoped $YBa_2Cu_3O_{7-\delta}$, we have measured the magnetization of fourteen underdoped $YBa_2Cu_3O_{7-\delta}$ samples under 1 T from T_C to 400 K. The oxygen contents are ranging from 6.43 to 7.00, and the critical temperatures T_C from about 30 K to 91 K. We present here high resolution susceptibility data corresponding to a sensitivity of 10^{-8} μ_B per Cu atom. We separate the different contributions to the magnetization. We find: i) a small ferromagnetic contribution, visible at all temperatures within our range of measurement and consistent with a few ppm of Fe_30_4, ii) A "1/T" paramagnetic contribution attributed to a few percent of free Cu ions, iii) The contribution of the "pseudogap" which gives a susceptibility increasing with temperature excepted in the optimally doped samples where the susceptibility is flat as expected for Pauli paramagnetism. We discuss the physical implications of this contribution in light of experiments from Fauqué *et al.*

Brigitte Leridon
LPEM - CNRS/ESPCI - 10 rue Vauquelin -75231 Paris cedex 05 - France

Date submitted: 12 Dec 2007 Electronic form version 1.4