Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Superconductivity in Cuprates through Loop Current Fluctuations CHANDRA VARMA, University of California, Riverside — The quantum-critical fluctuations of the loop-current order parameter discovered [1] in underdoped cuprates has been derived [2] recently to be of the phenomenological form proposed to produce the marginal fermi-liquid [3]properties in the normal state. The coupling function of these fluctuations to fermions is calculated and an effective particle-particle scattering through exchange of such fluctuations is generated. Partial wave decomposition of this scattering shows attractive interaction in the d-wave pairing channel. The coupling constant and the cut-off of the fluctuations is used to estimate the order of magnitude of T_c. Variation of T_c with hole density is also discussed. [1] C.M. Varma, Phys. Rev. **B73**, 155113 (2006); B. Fauque et al., Phys. Rev. Lett, **96**, 197001 (2006); A. Kaminski, et al., Nature **416**, 610 (2002). [2] Vivek Aji and C. M. Varma, cond-mat/0610646. [3] C.M. Varma, et al. Phys. Rev. Lett., **63**, 1996 (1989).

Chandra Varma
University of California, Riverside

Date submitted: 20 Nov 2006 Electronic form version 1.4