Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Gap Distributions in Cuprate Superconductors[1] ASHOT MELIKYAN, University of Florida, BRIAN M. ANDERSEN, University of Florida, TAMARA S. NUNNER, Institute of Theoretical Physics, Berlin, P. J. HIRSCHFELD, University of Florida — Recent Scanning Tunneling Microscopy (STM) data on $Bi_2Sr_2CaCu_2O_{8+x}$ impose stringent restrictions on the spatial distribution of the superconducting order parameter and scalar potential due to impurities. In Ref. [1] it was shown that these distributions are inconsistent with a conventional mean-field approach where the inhomogeneities in the LDOS are driven by a scalar impurity potential. It was further demonstrated that the salient experimental features of the LDOS spatial modulations can be obtained if the pairing coefficient itself is assumed to be enhanced by the dopant atoms. Here, we report additional features of the LDOS that support the conclusions of Ref. [1]. [1] T. S. Nunner, B. M. Andersen, A. Melikyan, and P. J. Hirschfeld, Phys. Rev. Lett. 95, 177003 (2005)

[1]This work was supported by A. v. Humboldt Foundation (T.S.N.), Institute of Fundamental Theory (A.M.), and ONR Grant No. N00014-04-0060 (P.J.H. and B.M.A.)

Ashot Melikyan
University of Florida

Date submitted: 30 Nov 2005 Electronic form version 1.4