

Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Phenomenological Investigation of the Superconducting Order Modulations in Cuprate Superconductors LEI JIANG, YAN CHEN, ZIDAN WANG, Department of Physics, The University of Hong Kong — Recent high-resolution scanning tunneling spectroscopy experiments on cuprate superconductors such as NCCOC and BSCCO reveal a real-space modulation of local density of states spectrum at low energies in the pseudogap state. Motivated by these experimental findings, we present a phenomenological study of electronic structure by solving the Bogoliubov-de Gennes equations based upon the assumption of the existence of superconducting order modulations. Various one dimensional stripe phase and two dimensional checkerboard pattern with different periodicities are considered in our calculations. We present results for some physical quantities such as local density of states, spectral weights, and the spin susceptibility. Some interesting features are obtained and comparisons with experiments are made as well.

Yan Chen
Department of Physics, The University of Hong Kong

Date submitted: 05 Dec 2004

Electronic form version 1.4