Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Unconventional Pairing in 2D lattice with an "Inherent Gap" RENYUAN LIAO, KHANDKER QUADER, Department of Physics, Kent State University — We investigate superconducting pairing in 2D lattice with an "inherent gap". In this calculation, we take this gap to be a constant, and thus similar to that in semiconductors. We consider different pairing symmetries, namely, s-wave, extended-s-wave, p-wave and d-wave. We calculate superconducting gap parameters, critical temperatures, chemical potential, etc in terms of interaction strength and filling factor. There is a sharp transition fom the "inherent gapped state" to a superconducting state for half filling f=1/2, corresponding to the undoped case. For finite doping, the transition becomes a smooth crossover. We also explore other features, such as the effect of phase fluctuations and the resulting Kosterlitz-Thouless transition; tunneling density of states, etc.

Khandker Quader
Department of Physics, Kent State University

Date submitted: 30 Nov 2005 Electronic form version 1.4