

Abstract Submitted  
for the MAR05 Meeting of  
The American Physical Society

**Low Temperature Quasiparticle Transport in a d-Wave Superconductor with Coexisting Charge Density Wave Order** ADAM DURST, SUNY Stony Brook and Yale University, SUBIR SACHDEV, Yale University, STEVEN GIRVIN, Yale University — In light of recent experiments suggesting the coexistence of d-wave superconductivity (dSC) and charge density wave order (CDW) in the high- $T_c$  cuprate superconductors, we consider a phenomenological model in which the relative magnitude of the two order parameters can be varied by hand. For a CDW of wavevector  $(\pi, 0)$ , there exists a critical value of the CDW order parameter beyond which the nodes in the energy spectrum of the dSC quasiparticles become fully gapped. Using a Nambu formalism generalized to include the combined effect of the dSC and CDW order parameters, we calculate the low temperature thermal conductivity across this nodal transition. Surprising results are obtained which may be relevant to low temperature thermal transport measurements in the underdoped cuprates.

Adam Durst  
SUNY Stony Brook and Yale University

Date submitted: 30 Nov 2004

Electronic form version 1.4