Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Magnetic field effects on the excitonic absorption spectra of semiconducting single-walled carbon nanotubes HONGBO ZHAO, University of Hong Kong, ZHENDONG WANG, SUMIT MAZUMDAR, University of Arizona
— We have investigated the magnetic field effects on the electronic structure and absorption spectra of semiconducting single-walled carbon nanotubes (S-SWCNTs) within a Coulomb correlated π-electron model. [1] [2] We consider magnetic field parallel to the nanotube axis, which introduces the Aharonov-Bohm phase in the wavefunction. Recent experiments claim to have observed the energy shift and splitting due to the magnetic fields [3] Some of our theoretical results are substantively different from existing results. Comparison with recent experiments are made.

[1]H. Zhao and S. Mazumdar, Phys. Rev. Lett. **93**, 157402(2004).
[2]Z. Wang, H. Zhao, and S. Mazumdar, Phys. Rev. B **74**, 195406 (2006).
[3]S. Zaric *et al.,* Phys. Rev. Lett. **96**, 016406 (2006).

Sumitendra Mazumdar
University of Arizona

Date submitted: 20 Nov 2006 Electronic form version 1.4