Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Magneto-electronic specific heat of graphene[1] SHIH-YANG LIN, Physics, National Cheng Kung University, Tainan, Taiwan, YEN-HUNG HO, Physics, National Sun Yat-Sen University, Taiwan, MING-FA LIN, Physics, National Cheng Kung University, Tainan, Taiwan, YUAN-CHENG HUANG, Center for education, Kao Yuan University, Kaohsiung, Taiwan — The electronic specific heat related to the Landau levels of monolayer graphene is studied by the Peierls tight-binding model. The low-temperature thermal properties are dominated by the two low-lying Landau levels with the Zeeman splitting. They give rise to rich temperature and magnetic-field dependence. The T-dependent specific heat reveals the composite form of 1/T and exponential function. Also, a prominent peak appears in the T-dependent (B-dependent) spectrum with its critical temperature T_c (critical magnetic field B_c). Moreover, there has a simple linear relationship between $T_c$and B_c. In a slightly doped graphene, there exists an extra shoulder structure in the specific heat. Such structure mainly comes from the Zeeman effect and temperature-dependent carrier distribution.

[1]NSC 99-2112-M-244-001-MY2

Shih-Yang Lin
Physics, National Cheng Kung University, Tainan, Taiwan

Date submitted: 19 Nov 2010 Electronic form version 1.4