Abstract Submitted
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Interband Magneto-Optics in Carbon Nanotubes in Pulsed High Magnetic Fields S. ZARIC, G.N. OSTOJIC, J. KONO, Dept. of Elec. & Comp. Engineering, Rice Univ., O. PORTUGALL, P. FRINGS, G. RIKKEN, LNCMP, Toulouse, France, S.A. CROOKER, M. FURIS, NHMFL, Los Alamos National Lab, X. WEI, NHMFL, Florida State Univ., H.U. MUELLER, M. VON ORTENBERG, Humboldt University Berlin, Germany, V.C. MOORE, J. SHAVER, R.H. HAUGE, R.E. SMALLEY, Chemistry Dept., Rice Univ. — To extend our earlier work[1] on the Aharonov-Bohm effect in carbon nanotubes to higher fields, we have performed interband magneto-absorption and magneto-photoluminescence experiments in micelle-suspended single-walled carbon nanotubes in pulsed high magnetic fields up to 71 T. Because of their anisotropic magnetic susceptibilities, the nanotubes dynamically align in response to the pulsed magnetic fields, exhibiting time- dependent optical anisotropy. At fields above ∼60 T, we observe clear splittings of absorption peaks, a signature of the Aharonov-Bohm effect. The amount of splitting as a function of magnetic field will be discussed by taking into account the time-dependent angular distribution of the nanotubes. Furthermore, the relative intensities of the split peaks will be examined in light of recent theories predicting field-dependent oscillator strengths.

[1]S. Zaric *et al.*, Science **304**, 1129 (2004).

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