

Abstract Submitted  
for the MAR14 Meeting of  
The American Physical Society

**Photon Induced Dynamic THz Conductivity Change in Graphene**

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The linear dispersion relation in graphene gives rise to large and highly tunable conductivity at THz regime, which makes graphene a promising candidate for new optoelectronic devices. We use optical pump THz probe spectroscopy to investigate photon induced conductivity change in graphene in time domain, and show that the THz response sensitively depends on the initial doping of graphene. This study sheds light on the carrier relaxation in graphene after optical excitation and provides valuable information for designing future graphene-based opto-electronic device.

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Date submitted: 15 Nov 2013

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