

PHYSICS DEPARTMENT

COLLOQUIUM

“Graphene and THz Radiation: Time Resolved Spectroscopy and Applications”

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LHSB 1.104 (Brownsville)

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10:50am – 12:20pm

Abstract: Graphene, the two-dimensional lattice of hexagonally arranged carbon atoms, is a gapless semiconductor with outstanding properties. The conduction and valence band are characterized by a linear dispersion at low electron energy and touch each other at the so called Dirac points. This unique band structure defines the THz optical properties of graphene. I will give a brief introduction to these properties and the experimental technique used to investigate the carrier dynamics via time-resolved spectroscopy. Applying a magnetic field or patterning of graphene into ribbons leads to new effects that make graphene a promising material for tunable Landau lasers or nonlinear THz optics. In the last part of my talk I will present two optoelectronic THz applications of graphene, namely an ultrafast broadband detector and a waveguide based modulator that allows efficient modulation in a broad spectral range.