QPhysics
AT QUEENS COLLEGE

Colloquium Notice

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Nonlinear optics with quantum-engineered intersubband metamaterials

Intersubband transitions in n-doped semiconductor heterostructures provide the possibility to quantum engineer one of the largest known nonlinear optical responses in condensed matter systems. I will discuss how we engineer and use these nonlinearities to produce room-temperature terahertz quantum cascade laser sources based on efficient intra-cavity difference-frequency mixing, polaritonic metasurfaces with ultra-fast electrical tuning, and ultra-thin highly-nonlinear metasurfaces for frequency conversion. Structures discussed here represent a novel kind of hybrid metal-semiconductor metamaterials in which exotic optical properties are produced by coupling electromagnetically-engineered resonances in plasmonic nanostructures with quantum-engineered intersubband transitions in semiconductor heterostructures.

Monday
May 5, 2014
Starts at 12:15 PM
Coffee at 12:00 PM
Physics Conference Room, SB B326