COHERENT TERAHERTZ SPECTROSCOPY: THE ULTIMATE TOOL FOR LOW-ENERGY SEMICONDUCTOR PHYSICS RESEARCH

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THz radiation, formerly called far-infrared light, is loosely defined as electromagnetic wave with a frequency of 0.3 THz (1 mm in wavelength) to 20 THz (15 um). Recent technical development in this frequency region enabled us to coherently measure the ultrafast (pico-second to femto-second) oscillation of the electric field in time-domain. By taking full advantage of this ultimate measurement technique, wide variety of phenomena

in solids can be studied in detail. These include intra-excitonic transition, impurity transition, phonon excitation, Drude response, and so on. In this talk, I will introduce the uniqueness and usefulness of coherent terahertz spectroscopic tools.