

Ultrafast Spectroscopy and Non-Equilibrium Dynamics in the Solid State

- I. Overview
 - a. Technology
 - b. Non-Linear and Non-Equilibrium Dynamics
- II. Time Resolved “Light” Sources
 - a. Ultra-short Pulse Lasers and Amplifiers
 - b. White Light Sources and Optical Parametric Amplifiers
 - c. THz-Generation
 - d. Ultrafast Transport
 - e. High Harmonics Generation/Attosecond Technology
 - f. X-Ray sources/Time-resolved Electron Scattering
- III. Pump probe spectroscopy
 - a. Time-domain spectroscopy (IR, THz, Raman, ARPES, ...)
 - b. Dynamical phase transitions
- IV. Ultrafast Electron Dynamics
 - a. Metals/Semiconductors
 - b. Molecules/Molecular Crystals
 - c. Ultrafast Plasmonics
- V. Collective Excitations
 - a. Coherent Phonons
 - b. Coherent Magnons
 - c. CDW/SDW motion
- VI. Dynamics in Correlated Quantum Materials
 - a. Quantum Quenches
 - b. Exciton Dynamics
 - c. Competing Interactions
 - d. Dynamical Stabilization
- VII. Non-Equilibrium Superconductivity

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