

November 15, 2021 10:00 AM

QED & Materials seminar

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Title

"From electron photo-excitation to THz amplification in Ta₂NiSe₅"

Abstract

In this talk I will describe recent work on pump and probe experiments in Ta₂NiSe₅. Probing THz optical reflection, after high frequency optical pumping has revealed THz amplification of reflectivity in the pumped state. Using both model hamiltonians and ab-initio DFT calculations, we reveal that strong electron phonon interactions are responsible for this down conversion. I will show how photo-electrons can excite strong phonon fluctuations in the THz region which then leads to the amplification of optical reflection. To address the full dynamics of the system we need to go beyond TD-DFT since phonon fluctuations play a crucial role in the amplification process.