



SFB1242

Nichtgleichgewichtsdynamik kondensierter
Materie in der Zeitdomäne

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Lightwave electronics: Crystal electrons controlled by the electric field of light

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The key idea of lightwave electronics is to utilize the oscillating electric field of ultrashort light pulses as a transient voltage bias. With this approach, atomically strong peak electric fields can be applied to a solid and electrons are accelerated faster than any scattering mechanism can destroy their coherence. The coherently driven electron ensemble radiates electromagnetically, revealing the underlying dynamics. In this talk, I will focus on results obtained during my PhD thesis. The process of high-harmonic generation in crystals is investigated in both the spectral and the temporal domain. By accelerating previously photo-generated electron-hole pairs, we could realize coherent collisions among these many-body excitations. In a last set of experiments, I will demonstrate how this approach can be utilized to control the so-called valley pseudospin in atomically thin transition metal dichalcogenides.

Für diese Zeit steht eine Kinderbetreuung nach vorheriger Anmeldung zur Verfügung.

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