



18th November 2015 - 2:00 p.m.
CFEL-bldg. 99, seminar room IV

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Transient optical properties of semiconductors under femtosecond X-ray

Semiconductors under femtosecond X-ray pulses are excited to nonequilibrium states. This can lead to observable material modifications including phase transitions. During the excitation and relaxation processes, optical properties of solids, like reflectivity, transmission and absorption, are changing, influenced by electronic excitation and the evolution of the atomic structure. We apply a unified hybrid model to evaluate and trace these effects. Transient evolution of the optical properties is followed with a semi-empirical transferable tight binding approach. The presented methodology for calculation of complex dielectric function proves to be capable of describing changes of optical parameters during ultrafast X-ray irradiation of semiconductors and shows a good agreement with experimental data.