

Transitions in matter induced by intense X-ray radiation and their diagnostics

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Abstract

Femtosecond intense light pulses from X-ray free-electron laser can trigger transitions in solids. Their theoretical description is a challenge, as it has to include the contributing ultrafast processes - strongly out of equilibrium. At the same time, for comparison with some experimental data, long-timescale relaxation of the excited system (\gg ps) should also be treated. In this talk I discuss some chosen X-ray induced structural transitions in solids, their experimental diagnostics and the necessary requirements for actual and developed theory tools to complement it.