

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

Thursday 15 September 2022 09:00 (45 minutes)

X-ray induced structural transitions in solids are in focus of this talk. Depending on the dose absorbed, an irradiation with a femtosecond X-ray pulse can trigger an ultrafast electronic or structural transition in solid materials. In magnetic materials, an X-ray triggered ultrafast demagnetization can occur. In this talk, selected study cases for these transitions are presented. Dedicated theoretical modeling reveals complex multistage evolution of the irradiated systems, confirmed by experimental measurements performed at X-ray free-electron-laser facilities. Challenges remaining for the modeling and quest for further improvements of transition diagnostics are discussed.

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Session Classification: Morning Session (Thursday)