KOLLOQUIUM PHYSIK

Femtosecond X-Ray Experiments: New Observables for Chemical Dynamics Studies

Prof. Dr. Chrisitan Bressler
European XFEL GmbH, Schenefeld

Hörsaalgebäude II
Hörsaal 2

Dienstag, den 20.06.2017
16:30 Uhr

Kolloquiums-Kaffee ab 16:00 Uhr
im Raum P2-E0-414
(Alle sind herzlich eingeladen)
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Time-resolved x-ray tools allow measuring electronic and geometric structure changes. X-Ray emission spectroscopy is sensitive to electronic changes, such as oxidation and spin states, while x-ray absorption fine structure tools deliver information about the local geometric structure around the selected absorbing atom. Combining these tools with forward scattering in one single setup allows to extract simultaneous information about the local to rather global structural changes occurring in the reacting system.

We will present some case examples, for which pico- and femtosecond x-ray experiments deliver new insight into evolving dynamic processes, including reactive high-valent iron compounds and a class of spin transition systems. This will be preceded by an introduction about the information content of x-ray tools.

Finally, all these tools can be combined into one single experimental setup, and the Femtosecond X-Ray Experiments (FXE) Instrument at European XFEL will allow just this, after operation starts in late Summer 2017. We will present the current status of this 3.4 km long free electron source and the new instrumentation available for the broader user community.