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AT THE FOREFRONT OF NANOSCIENCE



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NANOSCIENCE COLLOQUIUM

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at 15:15,
K-space, Fysicum

Time- and Angle-Resolved Photoemission Spectroscopy on a Femtosecond Time-Scale

Rapid progress in ultrafast X-ray science worldwide, both in high-harmonic and X-ray free electron laser sources, has paved the way for a completely new generation of real time experiments investigating ultrafast processes in all areas of science. Femtosecond and attosecond pulses are now available spanning the extreme ultraviolet and soft X-ray regions of the spectrum that are perfectly synchronized to a pump laser pulse.

After an introduction to high-harmonic generation (HHG) and survey, the impact of using these light-sources for the study of ultrafast material science will be shown. For instance, the laser assisted photoelectric effect (LAPE) could be demonstrated for IR-XUV excitation of a Pt(111) surface as well as laser assisted Auger decay (LAAD). Recent scientific breakthroughs employing X-ray pulses from HHG in the areas of surface dynamics, and correlated-electron materials will be discussed. The review concludes with a summary and an outlook to the feasibility of realtime studies of photo-induced phase transitions in a broad class of advanced correlated materials.

Host: Anders Mikkelsen (Synchrotron Radiation Research)