UNIKASSEL VERSITÄT

Physikalisches Kolloquium

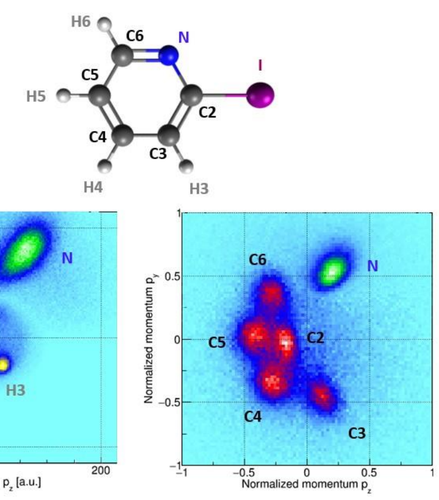
Thursday, 24.11.2022, 16:15, HS 100
In presence

Prof. Dr. Till Jahnke, European XFEL, Schenefeld:

Towards Molecular Movies made with Synchrotrons and X-Ray Free Electron Lasers

Abstract

Recording real-time movies of dynamical processes inside molecules and, for example, chemical reactions has been a driving force for many disciplines in fundamental sciences during the last decades. Comparably new are experimental techniques, that involve single particle coincidence detection for imaging single molecules in the gas phase. So-called Coulomb explosion imaging uses ultrashort light pulses to fragment molecules allowing to infer the initial molecular geometry from the breakup pattern and photoelectron diffraction imaging employs the interference pattern of electrons emitted from molecules to gather such information. The talk will introduce to the aforementioned experimental techniques and depict several examples of recent measurements performed at the European X-ray free-electron laser. Synchrotrons light sources provide light pulses that are in principle too long to be compatible with the requirements of shooting molecular movies. Yet, there are ways to circumvent this flaw by using the information obtained from the coincidence measurement. The talk will show corresponding examples of such molecular movies recorded using synchrotron light, as well.



All of you interested in physics are cordially invited!

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