



Joint LLC Seminar

Thursday October 13th, 15:15
The Rydberg Lecture Hall, Dep. of Physics

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**The European XFEL –
An X-ray lightsource offering new opportunities for research
in the ultrafast and high-field domains**

European XFEL is an international large-scale user facility for research using x-ray free-electron laser (FEL) radiation. X-ray FEL radiation is characterized by very intense, ultrashort and coherent pulses of x-ray radiation, complementary to both synchrotron and visible laser radiation. European XFEL started user operation in 2017 [1] after about 8 yrs of construction and offers research opportunities employing high repetition rate x-ray FEL radiation in the range from 0.25 to 25 keV (0.05 – 5 nm) at initially six science instruments, each dedicated to a specific area of application.

In the focus of scientific applications of the European XFEL are those of the ultrafast time domain and as well of the high-field domain. Applications are targeted on many different types of samples – from highly excited ions via complex solids to huge biomachines – under a huge variety of environments – from vacuum via natural solvents to extreme pressures and field strength – by also applying ultrashort lasers of variable wavelength to study dynamics. Such experiments will support fundamental research applications to e.g. solve the structure of complex bio-matter, study ultrafast chemical processes, disentangle electronic state dynamics of complex materials, or reveal the properties of matter under extreme conditions.

In the presentation I'll provide a brief overview of the facility and available instrumentation and will show first experiments performed and their results.

[1] W. Decking et al, Nature Photonics **14**, 391 (2020), DOI: 10.1038/s41566-020-0607-z

The Rydberg Lecture Hall is located at the Department of Physics, Professorsg 1

**Coffee and refreshments will be served
before the seminar, from 15:00**

