

X-ray Free Electron Lasers & ultrafast x-ray science

Sakura Pascarelli

European XFEL - Holzkoppel 4, 22869 Schenefeld, Germany

In this lecture I will introduce the basics of X-ray Free Electron Lasers, the properties of the produced X-rays, how they are generated and how they differ from the X-rays available at the more familiar Synchrotrons. I will then illustrate the new scientific opportunities that are opening thanks to the advent of Hard X-ray Free Electron Lasers and show some examples in different fields of application from ultrafast science to extreme states of matter.