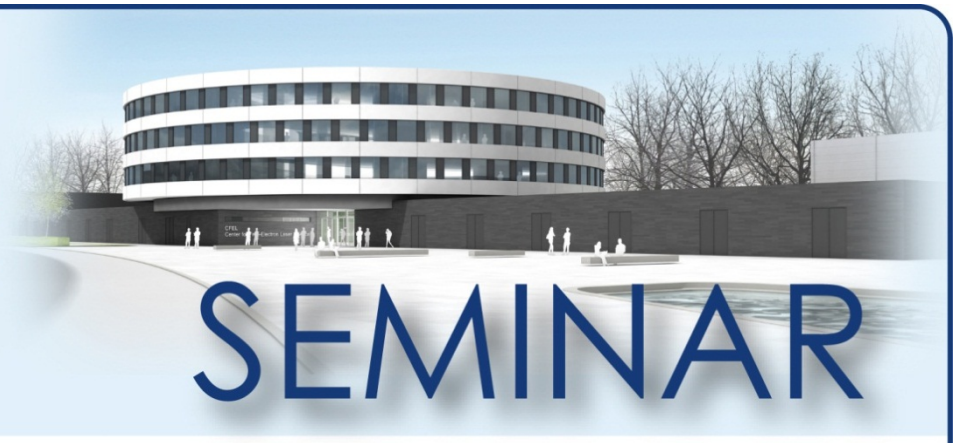
CFEL SCIENCE



SEMINAR

3rd March, 2016 - 10:00
CFEL-bldg. 99, seminar room II (EG.078)

Chris P.J. Barty

Lawrence Livermore National Lab., Livermore, CA, USA

Mono-energetic gamma-ray sources and the emergence of nuclear photonics

Tunable, polarized, mono-energetic, laser-like beams of x-rays and gamma-rays may be created via the optimized Compton scattering of pulsed lasers off of ultra-bright, relativistic electron beams. Above 2 MeV, the peak brilliance of compact, laser-Compton sources can exceed that of world's largest synchrotrons by more than 15 orders of magnitude.

These sources enable for the first time the efficient pursuit of nuclear science and applications with photon beams, i.e. Nuclear Photonics. Potential applications are numerous and include isotope-specific nuclear materials management, element-specific medical radiography and radiology, non-destructive, isotope-specific, material assay and imaging, precision spectroscopy of nuclear structure and photon-induced fission. This presentation will review activities at the Lawrence Livermore National Laboratory related to the design and optimization of laser-Compton systems and to the development of the unique science and applications enabled by them.

Host: Franz Kärtner, CFEL UX Seminar