



## **DoNuTS Technical Meeting**

**16 January 2008**

**Time: 1600 Wednesday, 16 January 2008**

**Place: NE Conference Room, 4101 Etcheverry**

**Speaker: Chris Barty, LLNL**

**Subject: Development of Laser-based Ultrabright  
Gamma-ray Sources for Isotope Detection  
and Imaging**

Thomson scattering of laser photons from relativistic beams of electrons can produce beams of tunable, monochromatic gamma-rays whose peak brightness exceeds that of the nation's largest synchrotrons by more than 15 orders of magnitude. Spatially resolved excitation of nuclear resonance fluorescence (NRF) is easily accomplished with these sources and provides a unique mechanism for isotope-specific imaging of shielded materials. In this presentation, an overview of efforts at LLNL to develop laser-based gamma-ray sources and to detect and image special nuclear materials for homeland security applications with them will be presented.