
Contribution ID: **263** Type: **talk**

# Time Resolved Imaging of Shock Compressed Matter Using X-Rays from a Laser Wakefield Electron Accelerator

*Friday, 29 September 2017 12:00 (30 minutes)*

Betatron radiation from laser wakefield accelerators is an ultrashort pulsed source of hard, synchrotron-like x-ray radiation. It emanates from a centimetre scale plasma accelerator producing GeV level electron beams. In recent years betatron radiation has been developed as a source capable of taking high resolution x-ray images in compact geometries, however until now the short pulse nature of this light has not been exploited. This talk will detail experiments which utilised betatron radiation to probe a rapidly evolving phenomenon by imaging laser driven shock waves in solid density targets. The imaging resolution was improved to a point where it was comparable to that which has been achieved in similar experiments performed at conventional synchrotron light sources. This suggests that compact betatron imaging beamlines could impact positively on the imaging and diagnosis of high-energy-density physics experiments. Such measurements could be important for the validation of equation of state models and understanding the phases of matter inside planets.

**Primary author:** Dr WOOD, Jonathan (Imperial College London)

**Presenter:** Dr WOOD, Jonathan (Imperial College London)

**Session Classification:** Plenary 10

**Track Classification:** Invited Plenary Talk