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Plenary - Neutron imaging – a powerful set of methods complementary to X-rays

Friday, 13 July 2012 12:30 (1 hour)

Abstract content
   (Max 300 words)

With the introduction of digital imaging detectors about two decades ago, the development of neutron imaging has taken huge leaps and has opened fields that had been unthinkable in the days of film radiography. Standard Radiography was soon followed by 3D neutron computed tomography, then stroboscopic imaging to look at running engines. Recent neutron imaging installations are optimised for high beam collimation and thus for high spatial resolution – and we can now examine rat lungs for medical studies which deliver no contrast for X-rays. The magnetic spin of the neutron can be used to either visualize magnetic fields, or measure depolarisation in magnetic materials, proving that the perfect samples that the neutron scatterers use are often not perfect at all. Phase contrast imaging is used for edge enhancement so we can even see single bubbles in Aluminium foam, and energy or wavelength scans let us measure the shift of Bragg cutoffs in crystal lattices to measure stress and strain directly in images.
The talk will look into details of recent Neutron Imaging methods and applications at modern facilities, like one will soon be available at NECSA.

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No

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