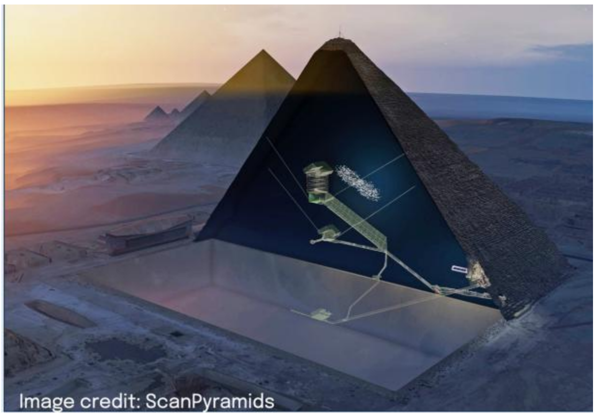
Café Scientifique Headingley

Monday 8th December 2025

Pyramids, volcanoes, railway tunnel and nuclear waste - an introduction to muon tomography

By Lee Thompson



Outline: Muon tomography is a non-invasive, non-destructive imaging technique that exploits naturally-occurring cosmic radiation, specifically muons, to form images of otherwise difficult-to-access objects. The technique has famously been used to discover hidden chambers in the Egyptian pyramids and to image the Fukushima nuclear reactor after the 2011 earthquake in Japan. Applications of the technique are wide-ranging. The presentation will introduce muon tomography and discuss applications such void detection in the UK's national rail infrastructure, the monitoring of stored CO_2 in the CCS process and the use of muon radiography in safety and safeguarding in the nuclear waste disposal process.

Lee Thompson is an emeritus professor of experimental particle physics at the University of Sheffield. He was head of the particle physics group in the Department of Physics and Astronomy and the Faculty of Science's assistant faculty director for research and innovation. Lee spent more than 40 years working in experimental particle physics at international labs such as CERN in Switzerland, Fermillab in the USA and, most recently at the huge underground neutrino detector, Super-K at J-PARC in Japan.

Venue: The New Headingley Club, 56 St Michaels Road, LS6 3BG
Time: Room opens 7:30pm, Talk begins promptly at 7:45pm
Entry: Donation please for room hire and expenses: £4 at the door

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