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The SCAPA facility: Pioneering novel applications for next generation laser plasma accelerators

Monday, 16 September 2019 19:00 (1 hour)

Laser wakefield accelerators are highly tuneable sources of radiation with a correspondingly varied number of potential applications, including ultrafast imaging, high energy physics and radiation therapy. The Scottish Centre for the Application of Plasma-based Accelerators (SCAPA) is a facility designed to allow proof of concept investigations towards the realisation of next generation laser plasma accelerators to be performed. One beamline at SCAPA is dedicated to laser wakefield acceleration, driven by a 350 TW Ti:sapphire laser operating at up to 5 Hz at full power. The beamline will be used to study a variety of topics and is currently in the commissioning and first experiments stage. A deformable mirror coupled to a wavefront sensor has been utilised to improve the laser focal spot. Planned usage of the beamline includes characterisation of the betatron X-ray source spectrum and spatial profile using bespoke X-ray optics; generation of attosecond electron bunches by use of a tailored plasma density profile; and radioisotope production. Recent results will be presented alongside future planned experiments.

Primary author: HOLT, George (University of Strathclyde)

Co-authors: Dr SHAHZAD, M (University of Strathclyde); Dr MAITRALLAIN, A (University of Strathclyde); Dr VIEUX, G (University of Strathclyde); Dr MANAHAN, G G (University of Strathclyde); Dr LI, W (University of Strathclyde); Dr FEEHAN, J (University of Strathclyde); Dr WIGGINS, S M (University of Strathclyde); Mr KORNASZEWSKI, A (University of Strathclyde); Mr BATTAGLIA, G (University of Strathclyde); Dr BRUNETTI, E (University of Strathclyde); Dr SPESYVTSEV, R; Dr REID, L R (University of Strathclyde); Mr AGUIAR, R A (University of Strathclyde); Prof. JAROSZYNSKI, D A (University of Strathclyde)

Presenter: HOLT, George (University of Strathclyde)

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