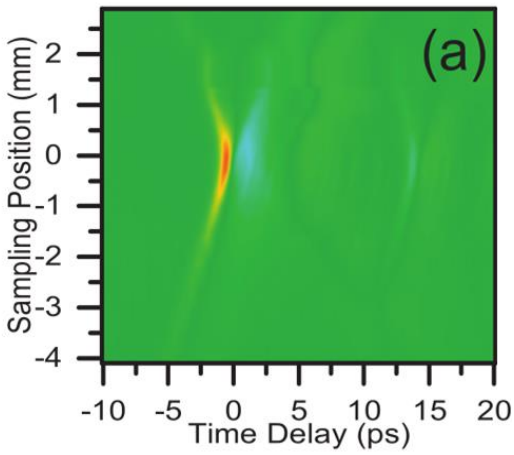
NEW PUBLICATION:

Longitudinally polarized terahertz pulses with field amplitudes exceeding 2 kV/cm



There is a need to develop longitudinally polarized sources in the terahertz spectral region for applications ranging from particle acceleration to microscopy. Laser-driven sources have not been able to produce the required field amplitudes, with typical values only reaching 30 V/cm, until now. In a paper recently published in Applied Physics Letters, Matthew Cliffe, Aniela Rodak (both Photon Physics PGs) together with Darren Graham and collaborators at ASTeC (STFC Daresbury Laboratory) have shown that it is possible to generate large longitudinally polarized terahertz field amplitudes, in excess of 2 kV/cm, from a large-area photo-conductive antenna. They have also shown that by scaling the pump laser fluence towards saturation this method is capable of a six fold higher longitudinal field, highlighting the possibility of achieving longitudinally polarized fields with amplitudes of 13.3 kV/cm.

The figure shows the direct detection of near single-cycle terahertz radiation polarised long the direction of beam propagation.

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