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Angular distribution of fast electrons in intense laser-solid interactions ROSS GRAY, DAVID CARROLL, XIAOHUI YUAN, University of Strathclyde, CHRISTOPHER MURPHY, University of Edinburgh, HAYDN POWELL, DAVID MACLELLAN, MARK QUINN, OLIVIER TRESCA, MIREILLE COURY, University of Strathclyde, GRAEME SCOTT, CERI BRENNER, Central Laser Facility, Rutherford Appleton Laboratory, CHRISTOPHER BRADY, University of Warwick, CHRISTOPHER RIDGERS, University of Oxford, JAMES GREEN, NICOLA BOOTH, DAVID NEELY, Central Laser Facility, Rutherford Appleton Laboratory, PAUL MCKENNA, University of Strathclyde — A clear understanding of the generation and transport of fast electrons is critical for applications of laser-solid interactions, such as ion driven cancer therapy or the fast ignition scheme of ICF. In this paper, we report on two experimental campaigns in which the escaping fast electron angular distribution (AD) was measured. In the first, a novel "wrap-around" detector is used to measure the electron and proton AD, as well as providing crude spectral information. By varying the laser incidence angle from 10° to 80°. The clear growth of a dominant surface guided component of fast electrons is directly observed. In the second, a novel 360°, fibre coupled scintillator detector is used to measure the escaping electrons AD. A magnetic spectrometer is used to provide a high resolution spectral measurement of the accelerated protons and electrons. For the first time, the effect of laser intensity, polarisation and target thickness, down to 20 nm, on the observed AD, at ultra-high contrast, is reported. A strongly polarisation dependent transition into a radiation pressure dominant regime is observed.

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