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**Time-resolved measurements of fast electron-sourced sheath dynamics** J.S. GREEN, Central Laser Facility, STFC, C.D. MURPHY, University of Edinburgh, R.J. GRAY, D.A. MACLELLAN, P. MCKENNA, University of Strathclyde, R.J. DANCE, C.P. RIDGERS, University of York, A.P.L. ROBINSON, D. RUSBY, L. WILSON, Central Laser Facility, STFC — Here we present unique fast electron generation and transport results from a recent experimental campaign on the Astra Gemini laser facility. Using complementary diagnostics a unique picture is presented of the evolution of electron sheath dynamics, and thus electron transport, in the interaction of an ultra-intense, short pulse (40 fs) laser with a solid target. Targets were irradiated at up to ($10^{21} W cm^{-2}$), with a chirped optical probe used to spatially and temporally resolve the rear surface target reflectivity. Clear snapshots of rapid ionisation and fast electron transport at the target rear surface were observed for a range of target and laser parameters. As well as providing a valuable insight into fast electron transport at the rear surface the role of fast electron refluxing inside thin targets was also investigated through the use of thin foils and novel targetry. These studies aim to see how the very earliest stages of the fast electron dynamics directly affect both the sheath evolution and ion acceleration at the rear surface.

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