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Ion beam generation experiments: near-critical density plasma proton acceleration using the Omega EP laser and ion source surface investigation using the T-cubed laser LOUISE WILLINGALE, A. MAKSIMCHUK, K. KRUSHELNICK, CUOS and NERS, University of Michigan, Ann Arbor, MI 48109, USA, P.M. NILSON, T.C. SANGSTER, C. STOECKL, Laboratory for Laser Energetics, University of Rochester, Rochester, NY 14623, USA, W. NAZAROV, University of St Andrews, St Andrews, Scotland, UK, G.M. PETROV, J. DAVIS, Naval Research Laboratory, Plasma Physics Division, Washington, DC 20375, USA, C.D. MURPHY, V. OVCHINNIKOV, Ohio State University, Columbus, OH 43210, USA — Experiments performed using the Omega EP laser facility (1000 J in 10 ps) investigating proton acceleration from near-critical density plasma will be presented. The laser propagation is investigated experimentally and with PIC simulation as it is expected to be influential on the proton acceleration. Also presented will be experiments investigating front vs rear surface acceleration of ions using the T-cubed laser at the University of Michigan (4 J in 400 fs). Thin foil targets are coated on the front, rear or both sides with a deuterated plastic layer and the accelerated deuterons are used to diagnose the interaction. PIC simulations are used to model the interactions and the influence of the ion acceleration processes on neutron generation experiments will be discussed.

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