

Abstract Submitted
for the DPP09 Meeting of
The American Physical Society

Experimental study of channel formation by 30 ps intense laser pulses in near-critical, mm-scale plasmas GIANLUCA SARRI, Queen's University Belfast, PETER NORREYS, STFC Rutherford Appleton Laboratory and Blackett Laboratory, Imperial College, UK, KATE LANCASTER, STFC Rutherford Appleton Laboratory, UK, MARCO BORGHESI, School of Mathematics and Physics, Queens University Belfast, UK, T. TANIMOTO, Osaka University, Japan, E. CLARK, Technological Educational Institute of Crete, Greece, S. HASSAN, Blackett Laboratory, Imperial College London, UK, N. KAGEIWA, Osaka University, Japan, Z. NAJMUDIN, Blackett Laboratory, Imperial College London, UK, R. SCOTT, STFC Rutherford Appleton Laboratory and Blackett Laboratory, Imperial College, UK, A. REHMAN, Blackett Laboratory, Imperial College London, UK, K. TANAKA, Osaka University, Japan, RAOUL TRINES, STFC Rutherford Appleton Laboratory, Didcot, UK — We will present results, obtained at the VULCAN laser (RAL, UK), of an experiment investigating channel creation in deuterium gasjets at different plasma densities (from 10^{18}cm^{-3} up to 10^{20}cm^{-3}) using laser pulses with parameters of Fast Ignitor relevance ($T\approx 30\text{ps}$, $I\approx 10^{18}\text{W/cm}^2$) and a range of diagnostics including optical and proton probing. For densities up to few times 10^{18}cm^{-3} , smooth and several mm long, strongly evacuated channels with sharp walls are created. For higher densities, the interaction appears to be more chaotic, with possible indication of unstable explosion of the channel walls. Soliton-like features are also observed in the channel vicinities.

Gianluca Sarri
Queen's University Belfast

Date submitted: 20 Jul 2009

Electronic form version 1.4