

Abstract Submitted
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Experiments Investigating the Interaction between Precursor Plasma from Wire Arrays and On-axis Foam Targets at 1 MA. J. PALMER, AWE, S. LEBEDEV, J. CHITTENDEN, S. BLAND, F. SUZUKI-VIDAL, G. HALL, Imperial College, S. BOTT, UCSD, M. SHERLOCK, CLF, RAL, D. AMPLEFORD, SNL — Low density cylindrical plastic foam targets are placed on the axis of several configurations of wire array z-pinch (e.g. the dynamic hohlraum). These targets can be preconditioned by the precursor plasma produced by wire array z-pinches prior to the array imploding. Experimental data has shown precursor plasma produced from both low current low wire-number arrays and high current high wire-number arrays. Experiments were carried out on the 1 MA pulsed power generator MAG-PIE, where targets were placed on the axis of non-imploding tungsten wire arrays. Data showed the target diameter was reduced, probably due to a snow-plough like compression, and that the precursor plasma formed a boundary layer at the surface of the target. This boundary layer evolved in a similar way to the precursor plasma column that forms on the axis of bare arrays however, its formation was more rapid than the precursor column and it developed an axial modulation with wavelength approximately one millimetre. Diagnostics were; x-pinch back-lighting; pin-hole imaged XUV/soft x-ray framing cameras; laser probing (shadowgraphy and interferometry); optical streak photography; VUV time and spatially (1D) resolved spectroscopy; filtered diamond photo-conducting diodes.

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