Abstract Submitted
for the DPP06 Meeting of
The American Physical Society

Experimental study of wire array plasma dynamics by laser probing[1] V.V. IVANOV, T.E. COWAN, V.I. SOTNIKOV, A. HABOUB, A. MOROZOV, A.L. ASTANOVITSKIY, B. LE GALLOUDEC, S.D. ALTEMARA, C.M. THOMAS, University of Nevada, Reno — Dynamics of the ablation stage and the beginning of the implosion stage in low wire number cylindrical, nested, and linear arrays were investigated in the 1-MA generator. Plasma bubbles arise in breaks on the wires in the beginning of implosion. The leading edges of the bubbles carry material with the speed >250 km/s. In linear wire arrays plasma cascades to the center of the array from wire to wire. In nested arrays, the implosion begins in the external cylinder. The plasma bubbles then hit the plasma columns in the internal cylinder and collapse to the center. Configuration of the magnetic field in the linear array was changed by variation of wire spacing. The regimes of ablation and implosion in the wire arrays with different mutual magnetic fields are compared. Influence of magnetic field reconnection in the central region on ion and electron acceleration is also discussed, and experimental evidence of conversion of magnetic energy to plasma particles is demonstrated.

[1]Work was supported by the DOE/NNSA under UNR grant DE-FC52-01NV14050.

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Date submitted: 18 Jul 2006 Electronic form version 1.4