Abstract Submitted
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Investigation of the Internal Structure of the Dense Z-Pinch[1] V.V. IVANOV, University of Nevada, Reno, J.P. CHITTENDEN, Imperial College, London, UK, S.D. ALTEMARA, University of Nevada, Reno, N. NIASSE, Imperial College, London, UK, P. HAKEL, R.C. MANCINI, D. PAPP, A.A. ANDERSON, A.L. ASTANOVITSKIY, V. NALAJALA, University of Nevada, Reno — UV laser probing at the wavelength of 266 nm was applied for investigation of wire-array Z-pinches at the Zebra generator. A fine structure of the 1 MA stagnated pinch was observed in unprecedented details. Kink instability with loop-like structures, disruptions, and micropinches were observed in Z-pinches at the peak of the x-ray pulse and later in time. Micropinches with the diameters of 60-90 μm are located inside necks of lower-density plasma. Instability with a period of 70-200 μm was observed on the edges of Z-pinches. Micron-scale density perturbations were observed in the precursor plasma and in the current carrying areas of the dense pinch. A homogeneous Z pinch plasma column was observed in star wire arrays. Development of instabilities was compared with 3D MHD Gorgon simulations. The Gorgon modeling is in good agreement with implosion and stagnation scenarios observed in two very different cylindrical and star wire arrays.

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