

Abstract Submitted
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Development of UV Two-Frame Imaging Diagnostics for Investigation of Plasma Dynamics in Z Pinches at Stagnation¹ SARA ALTEMARA, AUSTIN ANDERSON, DANIEL PAPP, VLADIMIR IVANOV, University of Nevada, Reno — Two-frame laser diagnostics with high spatial resolution at the wavelength of 266nm were developed for investigation of plasma dynamics in wire arrays at the stagnation stage on the 1 MA Zebra pulsed power generator. UV diagnostics is a significant advance compared to regular diagnostics at 532nm due to smaller adsorption and refraction in dense plasma. UV diagnostics at 266nm allows for unique observations of the internal structure of dense Z pinches hidden by trailing material [1]. Evolution of m=0 necks on the pinch and development of kink instability was observed with two-frame shadowgraphy. Fast plasma motion with a velocity greater than 100km/s was observed in the Z pinch at stagnation. Plasma motion in the stagnated Z pinches may be linked to generation of kinetic energy from magnetic energy.

[1] V. V. Ivanov, J.P. Chittenden, S. D. Altemara et al., Phys. Rev. Lett. 107, 165002 (2011)

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