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High Resolution Shadowgraphy and Interferometry at 266nm for 1-MA Z-Pinches[1] SARA ALTEMARA, VLADIMIR IVANOV, DANIEL PAPP, AUSTIN ANDERSON, ALEXEY ASTANOVITSKIY, University of Nevada, Reno
— A UV laser probing channel at the wavelength of 266 nm was implemented for investigations of wire-array Z-pinches at the Zebra generator. The UV channel has provided images of the dense plasma inside the lower-density trailing plasma, allowing the observation of details and structures in the pinch. Kink instabilities, loops, areas of disruption and micro-pinching were observed in Z-pinches. A high spatial resolution UV shadowgraphy and interferometry channel allows for investigation of the micron-scale instabilities. Experiments with high resolution shadowgraphy and interferometry are presented. The fine structure of the stagnated Z-pinches in cylindrical and star wire arrays was unfolded, and new information about instabilities was obtained. A two-frame UV shadowgraphy was tested for investigation of plasma dynamics. Shadowgraphy results show a very inhomogeneous pinch with instabilities on the microscopic level, strong kink instabilitiy, and micro-pinches. Interferometery results show plasma gradients on the edge of the pinch and a density of the trailing mass.

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