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Axial Instability Growth in Tungsten Wire Array Z-Pinches ADAM CAHILL, PATRICK KNAPP, JOHN GREENLY, SERGEI PIKUZ, TANIA SHELKOVENKO, DAVID HAMMER, Cornell University — The individual exploding wires in wire array z-pinches have been shown to suffer from axially nonuniformity beginning from the moment of plasma formation. This non-uniformity grows in amplitude and wavelength until it reaches what appears to be a material dependent wavelength at the time array implosion begins. Previous work by Knapp et al. [1] studied the temporal evolution of this instability in aluminum wire arrays. We have extended that work to include the evolution of tungsten wire array instabilities. Time gated laser shadowgraphy is used to track wavelength and amplitude over a series of shots to develop a record of the instability's growth. We attempt to identify array parameters which significantly contribute to the growth of this instability.

[1] Knapp, P. F., J. B. Greenly, P. A. Gourdain, C. L. Hoyt, M. R. Martin, S. A. Pikuz, C. E. Seyler, T. A. Shelkovenko, and D. A. Hammer. "Growth and Saturation of the Axial Instability in Low Wire Number Wire Array Z Pinches." *Physics of Plasmas* 17 (2010). Web.

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