Abstract Submitted
for the DPP20 Meeting of
The American Physical Society

On the relative importance of the different initial conditions that seed the electrothermal instability[1] TREVOR HUTCHINSON, University of Nevada, Reno, THOMAS AWE, Sandia National Laboratories, BRUNO BAUER, University of Nevada, Reno, BRIAN HUTSEL, Sandia National Laboratories, AIDAN KLEMMER, University of Nevada, Reno, MAREN HATCH, University of New Mexico, Albuquerque, DAVID YAGER-ELORRIAGA, Sandia National Laboratories, KEVIN YATES, Los Alamos National Laboratories, MARK GILMORE, University of New Mexico, Albuquerque — The electrothermal instability (ETI) plays an important role in the thermal and hydrodynamic evolution of dense metallic systems driven with extreme electrical pulses. The instability grows from gradients in the electrical resistivity, and is responsible for hampering numerous applications of pulsed-power technology. For the first time, metal surfaces have been tracked with approximately 20 um accuracy throughout an experiment. This tracking reveals no clear correlation between target defects and non-uniform thermal emissions indicative of the ETI. Additionally, the relative influence of surface topography and purity of metal composition will be compared. Data indicate enhanced stability to ETI may be found by employing ultra-pure materials.

[1]Work supported by NNSA SSAP award no. DE-NA0003872. This work was funded in part by Sandias LDRD Program (Project No. 200269).

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Date submitted: 01 Jul 2020 Electronic form version 1.4