

Abstract Submitted  
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**Understanding the relationship between current loss and load hardware geometry in Z machine experiments**<sup>1</sup> D. ZIMMER, University of California San Diego, M. R. GOMEZ, C. A. JENNINGS, C. MYERS, Sandia National Laboratories, F. CONTI, F. BEG, University of California San Diego — Inertial confinement fusion, x-ray source development, and dynamic material physics studies on the Z Pulsed Power Facility at Sandia National Laboratories rely on dependable coupling of the  $\sim 20$  MA drive current to the experiment load. Multi-MA current losses have been observed in a variety of experimental configurations and historically have been attributed to the double post-hole convolute, where current is joined from four magnetically insulated transmission lines (MITL). More recently, there have been indications that current is also lost in the final transmission line that connects the convolute to the load. We compare tens of experiments with varied transmission line and load configurations, that produce varied loss, in order to comprehend the nature of the current loss mechanism in this critical region. A key goal of this work is to understand the underlying physics of current loss and use that to identify the characteristics that make a transmission line optimized for load coupling. Generator and load currents are determined via B-dot monitors and velocimetry, respectively. Trends in current loss with various load hardware parameters will be presented.

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