

Abstract Submitted
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Reduction of radiographic spot size with dual diameter sub-mm rods AMANDA GEHRING¹, TODD HAINES, Los Alamos National Laboratory, KEVIN JOYCE, AARON LUTTMAN, Mission Support and Test Services, LLC, A. STEPHEN RICHARDSON, JACOB ZIER, Naval Research Laboratory — Image resolution can be improved by reducing the radiographic spot size of pulsed power machines. Recent measurements in support of this goal were conducted at the Mercury pulsed power accelerator at the Naval Research Laboratory. To further minimize the rod-pinch spot size beyond its “standard” 0.75 mm, the standard tungsten anode (0.75 mm diameter tapered to 0.25 mm over 5 mm at the tip) was replaced by a variety of dual diameter rods. In these new rods, the tip of the 0.75 mm or 1 mm anode is reduced to 0.5, 0.375, or 0.25 mm with the transition occurring sharply. The effect on spot size was assessed with pinhole camera images and the edge/line/point spread functions calculated from high-mag rolled edge images. A fortuitous added benefit of these measurements is that the dual-diameter rods have provided unique insight into the electron-anode coupling dynamics that are at play in all diodes of this type. These results will be presented.

¹I would prefer an oral presentation; if not selected, I can present a poster.

Amanda Gehring
Los Alamos National Laboratory

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