

Abstract Submitted
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Plasma Temperature Estimates from EUV Spectroscopy of an Aluminum Rod pulsed with MA Current¹ STEPHAN FUELLING, University of Nevada, Reno, TOM J. AWE, Los Alamos National Laboratory, BRUNO S. BAUER, IRVIN R. LINDEMUTH, RICHARD E. SIEMON, KEVIN C. YATES, University of Nevada, Reno — Plasma formation on the surface of aluminum rods driven by Zebra, a 1 MA, 100 ns rise time driver, resulting in a magnetic field between 1.5 - 4 MG has been studied. Plasma forms when the surface magnetic field reaches about 2.2 MG. This threshold is important for applications in magneto inertial fusion and magnetic insulated transmission lines of pulsed power systems. In particular, we want to understand the behavior of the inner liner surface in liner compression experiments of a field-reversed-configuration plasma performed at Shiva Star, AFRL, Albuquerque, New Mexico. Extreme ultraviolet (EUV) emission spectra from the aluminum surface were compared to PrismSPECT modeled spectra to determine the plasma temperature. In addition, EUV photodiodes with directly deposited filters were used to measure radiated power. For 1 mm diameter aluminum rods the temperature was estimated as ≥ 15 eV which is in agreement with temperature estimates from measurements in the visible and with radiation-MHD modeling.

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