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**Numerical Modeling of Plasma Formation and Evolution from Thick Aluminum Pulsed with Multi-Megagauss Magnetic Field**[1] B.S. BAUER, M.A. ANGELOVA, S. FUELLING, I.R. LINDEMUTH, R.E. SIEMON, UNR, W.L. ATCHISON, T.J. AWE, LANL, S.F. GARANIN, S.D. KUZNETSOV, VNIIEF — Understanding and predicting the formation and evolution of plasma from metal surfaces driven by intense current is important for both basic science and applications. Radiation-MHD simulations with UP, MHRDR, and Raven are explaining the experimentally observed evolution of thick aluminum pulsed with multi-megagauss field (see Invited Presentation by T.J. Awe). The simulated aluminum expansion agrees with laser-absorption and visible-light images. Surface plasma forms in low density material resistive enough to expand across the magnetic field, yet conductive enough for ohmic heating to exceed expansion cooling. The appropriateness of plasma formation has been checked via analytic calculation. The experimentally observed magnetic field threshold for plasma formation can be computationally reproduced using certain choices of EOS and conductivity. Radiation calculations then reproduce the signals measured by visible and EUV photodiodes. The radiation-MHD simulations have thus achieved results that agree well with observations.

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Bruno Bauer
University of Nevada, Reno

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