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Update on PHELIX Pulsed-Power Hydrodynamics Experiments and Modeling¹ CHRISTOPHER ROUSCULP, WILLIAM REASS, DAVID ORO, JEFFERY GRIEGO, PETER TURCHI, ROBERT REINOVSKY, BARBARA DEVOLDER, Los Alamos National Laboratory — The PHELIX pulsed-power driver is a 300 kJ, portable, transformer-coupled, capacitor bank capable of delivering 3-5 MA, 10 μ s pulse into a low inductance load. Here we describe further testing and hydrodynamics experiments. First, a 4 nH static inductive load has been constructed. This allows for repetitive high-voltage, high-current testing of the system. Results are used in the calibration of simple circuit models and numerical simulations across a range of bank charges ($\pm 20 < V_0 < \pm 40$ kV). Furthermore, a dynamic liner-on-target load experiment has been conducted to explore the shock-launched transport of particulates (diam. $\sim 1 \mu$ m) from a surface. The trajectories of the particulates are diagnosed with radiography. Results are compared to 2D hydro-code simulations. Finally, initial studies are underway to assess the feasibility of using the PHELIX driver as an electromagnetic launcher for planer shock-physics experiments.

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