

## **P5.2018 A new MJ-class pulsed-power facility for HEDP experiments**

*Friday, 12 July 2019 14:00 (2 hours)*

See the full abstract here <http://ocs.ciemat.es/EPS2019ABS/pdf/P5.2018.pdf>

We describe a newly commissioned pulsed-power machine, “M3”, for driving high energy density physics experiments at First Light Fusion. 2.5 MJ of stored electrical energy is discharged in 2  $\mu$ s, generating currents of up to 14 MA into a low-inductance load. The primary purpose of M3 is to launch high velocity projectiles for driving shocks into targets. The machine architecture consists of a 125  $\mu$ F bipolar capacitor bank, with a maximum relative charge of 200 kV. The capacitors discharge via 92 multi-channel ball gap switches into 6 parallel plate transmission lines, which feed the current into the vacuum target chamber. Machine current is monitored with several in-fibre Faraday rotation probes. The diagnostic suite consists of imaging and streaked VISAR, laser backlighting and self-emission imaging onto fast optical framing and streak cameras, and optical and IR pyrometry. We also present data on initial M3 experiments that have been focussed on projectile launch techniques.

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