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Magnetically Driven Isentropic Compression and Flyer Plate Experiments Using A Compact Capacitor Bank. CHENGWEI SUN, GUIJI WANG, CANGLI LIU, JIANHENG ZHAO, FULI TAN, NING ZHANG, JUN CHEN, Institute of Fluid Physics, Chinese Academy of Engineering Physics — The pulsed power generator CQ-1.5 is a compact capacitor bank of total capacitance 15.88 μF , maximum energy stored 50.8 kJ and normal discharging current 1.5MA in 500ns on a 2~3nH inductive load. This low cost generator has been developed by the Institute of Fluid Physics, and is motivated for isentropic compression experiments(ICE) up to 30~50GPa and flyer plate launching at velocity 5~7 km/s. It is characterized by low inductance (~18nH) attributed to the specially designed capacitor, the explosive network closing switch and the compact plate transmission line. The design and experiments of ICE specimens and flyers are described here. The measured free surface velocities of two ICE specimens of different thickness were treated by backward integration to acquire the compression isentrope of copper up to 50GPa. An energy conservation based model to predict the performance of magnetically driven flyers has been proposed and compared with the experimental data measured by VISAR interferometer.

- Prefer Oral Session
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