Abstract Submitted
for the DPP17 Meeting of
The American Physical Society

Sample pre-heating in magnetic ramp compression experiments on the GEPI high pulsed power driver. THIERRY D'ALMEIDA, PIERRE-YVES CHANAL, JEAN-LUC ZINSZNER, CEA, GAETAN DAULHAC, ITHPP — GEPI is a 3 MA, 500 ns, high pulsed power driver operated by the CEA and mainly used for dynamically compressing materials in a quasi-isentropic regime at stress levels up to 100 GPa. Usually, materials are loaded starting from ambient temperature conditions, thus, following a single thermodynamic path near an isentrope. Dynamically loading samples from non-ambient initial conditions, either in pressure or temperature, can significantly improve our ability to obtain direct measurements over specific thermodynamic paths of interest. For instance, ramp-compressing multiphase metallic materials from various initial temperatures can help constrain their Equation of State. We have recently equipped the GEPI facility with a preheating device capable of pre-heating metallic samples up to 1100 K prior to their loading. We present results from preliminary experiments on copper and iron ramp compressed starting from temperatures ranging from 300 K to 900K.

Thierry d'Almeida
CEA

Date submitted: 12 Jul 2017 Electronic form version 1.4