Contribution ID: **130** Type: **Poster**

SOME CAPABILITIES OF MAGNETIC IMPLOSION OF HIGH-VELOCITY CONDENSED-MATTER LINERS IN THE ALT-3 DRIVER

Tuesday 20 June 2017 13:30 (1h 30m)

In the ALT-3 driver design –with a 0.4-meter-diameter disk explosive magnetic generator and an electrically exploded opening switch –load currents can reach 70MA, which is high enough for driving a 3-mm-thick Al liner having a radius and a height of 4 cm to 20 km/s at an impact radius of 1 cm. The azimuthal magnetic field on the liner in this case grows to 6MG (magnetic pressure, up to 1.4 Mbar), and the temperature, to 15 eV, while the liner's interior part of about ˜40 % of liner mass remains solid and can generate pressures above 5 Mbar when hitting an Al target.

The paper reports the results of driver simulations with various parameters of the opening switch, the liner and the target. The liner implosion simulations were done in the one-dimensional magnetohydrodynamic approximation. They demonstrate the driver's capabilities, such as driving the liner to higher velocities and generating pressures up to 10-40 Mbar, - for high-accuracy Hugoniot measurements.

This work is of interest for high energy density research and studies of material properties under extreme conditions.

Author: Dr BUYKO, Anatoly (RFNC)

Presenter: Dr BUYKO, Anatoly (RFNC)

Session Classification: Poster session II - High-Energy Density Physics and Technology

Track Classification: High-Energy Density Physics and Technology