



Contribution ID: 394

Type: **Poster**

Measuring the compression velocity of a Z pinch in an axial magnetic field

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

Presentation demonstrates the results of measurements of the plasma boundary velocity during the compression of a metallic gas-puff Z pinch in an axial magnetic field. The experiment was conducted on the IMRI-5 facility (current pulse of 450-kA amplitude with a 450-ns rise time); the initial magnetic field B_z0 was varied in the range 0.15–0.6 T. The trajectories of radius vs time were constructed using two independent methods. First is well known technique: it is determination of an “inductance radius” rind using the dependence of the pinch inductance vs time. Second is a new techniques: it is using the B-dot probes for the determination of current sheath motion. The data obtained with the B-dot probes agree with the results obtained by other methods (optical imaging and determination of the pinch radius as a function of the time-varying pinch inductance $L(t)$). It is shown that the plasma compression velocity is $(1-1.5) \times 10^7$ cm/s at the implosion without the field B_z and 0.6×10^7 cm/s at at the implosion with $B_z = 0.6$ T.

Work supported by the grant of the Russian Foundation for Basic Research (grant No.17-08-00131-a and No.15-08-03845-a).

Authors: BAKSHT, Rina (IHCE); Dr ORESHKIN, Vladimir (Institute of High Current Electronics SB RAS); ROUSSKIKH, Alexander (Institute of High Current Electronics); Mr ZHIGALIN, Alexander (Institute of High Current Electronics SB RAS)

Presenter: BAKSHT, Rina (IHCE)

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

Track Classification: High-Energy Density Physics and Technology