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

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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  $0.6 \times 10^7$  cm/s at at the implosion with  $B_z = 0.6$ T.

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**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)

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