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Development of metal plate launcher setup for VISAR doppler velocimeter test and calibration.

Wednesday, 21 June 2017 16:00 (1h 45m)

This work devoted to development of laser diagnostic methods for various experimental studies in HEDgeHOB collaboration. Doppler based velocimetry interferometers (VISAR) will be actively applied in studies of shock waves processes in proton radiography experiments PRIOR [1,2] and high energy density in matter experiments HIHEX and LAPLAS [3].

Summary

At first stage of work was developed the metal plate launcher stand. This stand will be used for testing of different types of Doppler velocimeters and allow to launch metal disc with speed more than 300 m/s. The spiral inductance launcher is made of copper wire and have 7 mH self-inductance. Capacitor bank with capacity from 3 to 12 μF discharged by the thyatron TGI-1-150k/25 and produce current up to 15 kA in inductance. Ponderomotive force drives the object into motion. To measure the velocity of metal plate, the shadowgraphy method was used. To decrease aerodynamic resistance inductance was placed in a vacuum chamber. This setup allow to test and calibrate non-equal-shoulder interferometer with polarizable modulation of a signal (push-pull VISAR) (Fig. 1).

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Session Classification: Poster Session with Coffee break