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FLYER ACCELERATION BY MAGNETIC PRESSURE ON ANGARA 5-1 INSTALLATION

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The high pressure created by magnetic field which was induced by the current flowing through the flyer allows one to reach the megabar pressures and to accelerate the flyers to high velocities. For intense impact of this flyer onto the studied substance it is necessary that a significant portion of the flyer had the density close to the density of the solid. But a part of the stored energy would be spent to the Joule heating and the formation of shock waves in the flyer. The effectiveness of the flyer acceleration was studied on the Angara-5-1 installation at the linear current density up to 5 MA/cm.

The experimental and numerical study of the evolution of the aluminum flyer under flowing of sub-microsecond megaampere current pulse with linear current density up to 5 MA/cm through it was carried out. It was obtained that by the time ˜ 500 ns the substance of the flyer near its back surface and at a depth of about 0.3 mm is in the solid state, and the velocity of the back surface by this time is ˜ 10 km/s.

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