

Compression of the magnetic field in a laboratory explosive installation

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In this work the possibility of conducting experimental studies related to axisymmetric compression of the magnetic flux using a copper liner is considered. For this purpose, it is proposed to use a laboratory cylindrical compression explosive device with multipoint initiation. Testing of this installation was carried out by the authors earlier [1, 2]. In addition, it was used for experimental work related to axisymmetric compression of various media in previous works. The main advantage of this installation is the small TNT equivalent of the charge, which makes it possible to conduct experiments in domes and blast chambers. The paper considers various schemes of generation of the initial magnetic field: multi-turn and single-turn solenoid, Helmholtz solenoid. The problems that will have to be solved when compressing the magnetic flux in this installation are considered. One of them is related to the correct shape of the cylindrical compression of the liner, which is one of the reasons for the different timing of the multipoint initiation unit. Studies of the dynamics of axisymmetric compression of the liner, carried out using high-speed shooting, are presented.

- [1] Dudin S V, Sosikov V A and Torunov S I 2018 *J. Phys.: Conf. Ser.* **946** 012057
- [2] Dudin S V, Sosikov V A and Torunov S I 2019 *Combust., Explos. Shock Waves (Engl. Transl.)* **55** 507–511