GENERATION OF QUASI-PERPENDIQULARE COLLISIONLESS SHOCKS BY LASER-PRODUCED PLASMA TO SIMULATE THE EFFECTS OF SUPER-COMPRESSION OF THE EARTH MAGNETOSPHERE

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Giant plasma releases of so called Coronal Mass Ejections (CME, with kinetic energy up to $E_k \sim 10^{36}$ эрг) from the surface of the Sun and their potential catastrophical impact onto Earth's magnetosphere, with the probable opportunity to compress it 2, 3 or more times [1-3], represent one of the most important problem in the geophysical and historically-bioevolutional investigations of the past and present of the Earth. It was supposed that the re-connection of magnetic fields at MagnetoPause (MP) could play [2] an exclusive role in the inward shift of MP, but from the more general point of view (to perform laboratory simulation [1] of MP dynamics), the most important and common features of CME propagation in Solar Wind plasma are the formation of Quasi-Perpendiculare Shocks (Q-PS) ahead of Super-Alfvenic CME. It is provided by the almost radial (along to **R**) motion of CME from the Sun, while the Interplanetary Magnetic Field $\mathbf{B_0}$ has an angle $\theta \sim 45^0$ (relative to **R**) near the Earth orbit. Up to date, in spite of intensive development of laser energetics and energy [4] of Laser-Produced Plasma (LPP, e.g. in comparison with initial simulations [5] at KI-1 facility of ILP), such collisionless Q-PS never were studied in laboratory [6], excluding recent LPP-experiment (see Fig. 1) at KI-1 [7]. In the given work, a first results of our study were presented together with relevant calculations by hybrid codes and the data of physical model of VNIIEF [8] on the collisionless Magnetic Laminar Interaction of spherical LPP with magnetized background plasma. A special analysis was done on the conditions of whistler generation in front of oblique shocks. This work was supported by ILP SB RAS Research Program 0307-2016-0002 and by Fundamental Program of Presidium RAS/Siberian Branch of RAS on 2017.

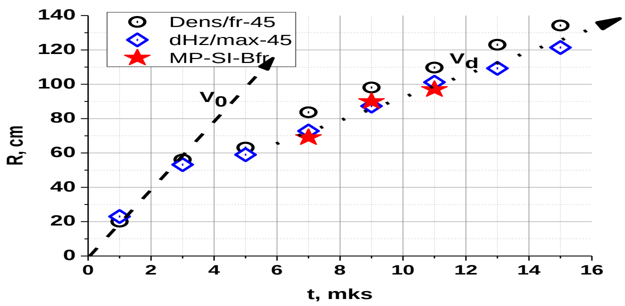

Fig. 1. R-t diagram propagation of strong disturbances in experiment **MP-SI** along to line target-dipole (at angle $\theta \sim 45^0$ to $\mathbf{B_{0z}}$), according to data: registration of front magnetic disturbances (asterisk) and data of hybrid code (on density front – circles and on maximum B_z-field – squares).

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