**Fast collapse of a diamagnetic cavity and the Hall effect during the expansion of a cloud of laser plasma into a magnetized background plasma**

A. A. Chibranov1, A. G. Berezutskiy1, A. V. Divin2, Yu. P Zakharov1, I. B. Miroshnichenko1,

I. P. Paramonik2, V. G. Posukh1, M. A. Rumenskikh1, I. F. Shaikhislamov1,

A. E. Dolgov1, A. E. Ivanov1, M. V. Loginov1

*1ILP SB RAS, Novosibirsk, Russia, chibranov2013@yandex.ru*

*2Department of Earth’s Physics, St. Petersburg State University, St. Petersburg, Russia*

At the KI-1 facility [1, 2], a series of experiments was carried out on the expansion of a spherically laser plasma cloud into a vacuum magnetic field, which demonstrated that the expansion of a plasma cloud leads to the generation of azimuthal magnetic fields due to the Hall effect, as well as the corresponding Hall currents leading to the transfer of the magnetic field and determining the phase of the collapse of the diamagnetic cavity [3].  
 In the latest experiment, it was shown that the presence of very rarefied background plasma completely suppresses the azimuthal fields and affects the nature of the collapse of the diamagnetic cavity, which now occurs much later and more slowly.   
 Thus, for the first time the experiments carried out made it possible to discover the relationship between the Hall effect and the collapse phase of a diamagnetic cavity, as well as with the presence of background plasma.

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1. Y.P. Zakharov et al //*AIP Conference Proceedings. – American Institute of Physics*, **369**, № 1, p. 357-362, (1996).

2. I. F. Shaikhislamov et al //*Plasma Physics and Controlled Fusion*, **56**, № 12, p. 125007, (2014).

3. A. A. Chibranov at al. Hall effects and the collapse of a diamagnetic cavity when a cloud of laser plasma expands into a vacuum magnetic field (submitted to a Special Issue of the Astronomical Journal).