

Abstract Submitted
for the GEC16 Meeting of
The American Physical Society

2D probe diagnostics of anisotropic plasmas with no velocity space symmetry ALEKSANDR MUSTAFAEV, St.Petersburg Mining University, Russia, VLADIMIR SOUKHOMLINOV, St.Petersburg State University, Russia, ARTIOM GRABOVSKIY, OSCAR MURILLO, SOFIA PODENKO, St.Petersburg Mining University, Russia — This paper is devoted to the development of the probe method used for analysis of non-equilibrium anisotropic plasmas. The probe method for determination of full electron and ion velocity distribution functions (EVDF) in axially symmetric plasmas was theoretically and experimentally approved^{1,2}. To recover the full EVDF to the Legendre polynomials of order N it is necessary to measure the second derivative of probe current I_U'' in probe's N different orientations. In³ there are the theoretical principles of the EVDF recovering method for plasmas with no velocity space symmetry. To determine the full EVDF with the same degree of accuracy it is necessary to measure I_U'' in flat probe's N² orientations. This paper gives further development of probe method. While restoring the full EVDF in plasma objects with bilateral symmetry it became possible to reduce the number of the probe's angular orientations by two. It opens up new possibilities to obtain new information about Langmuir paradox in plasma⁴. [1] Mustafaev A.S. et al. London: Plenum Press. V.367. P.531. 1998. [2] Mustafaev A.S., Soukhomlinov V.S., et al. Techn. Phys. V.60. P. 1778. 2015. [3]. R. Woods C., Sudit I. Phys.Rev. V.50.3. P.222. 1994. [4]. Godyak V. et.al. Plasma Sour. Sci. Techn. 24.052001 (5pp). 2015.

Aleksandr Mustafaev
St.Petersburg Mining University, Russia

Date submitted: 20 Jul 2016

Electronic form version 1.4