

Abstract Submitted
for the GEC11 Meeting of
The American Physical Society

Computational simulation of finite Langmuir probe characteristics in low-temperature plasma with magnetic field of arbitrary orientation and magnitude VOJTECH HRUBY, RUDOLF HRACH, Charles University in Prague, Department of Surface and Plasma Science — Langmuir probes are used to measure parameters of various types of plasma. Usually, the analysis of the probe characteristics are based on simplified theories, which cannot cover all configurations of the plasma and the probe. In the case of magnetized plasma, the measurement with a Langmuir probe is sensitive to the orientation of the probe to the magnetic field. Besides the theoretical approach, the computational simulations provide still better insight into these complex problems. In our contribution, we present a computational study of a cylindrical Langmuir probe diagnostics in a low-temperature plasma with an external homogeneous magnetic field. The model is fully three-dimensional, so that a general direction of the magnetic field, finite dimensions of the probe and processes on the dielectric holder of the probe could be included in the study. The presented numerical results comprise current-voltage characteristics and visualizations of sheath in the vicinity of the probe for various magnetic field magnitudes and directions.

Vojtech Hruby
Charles University in Prague, Department of Surface and Plasma Science

Date submitted: 13 Jul 2011

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