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**Effect of microwave field on the Langmuir probe characteristics**

AKIHIRO KONO, MITSUTOSHI ARAMAKI, Nagoya University — In measurements of electron energy distribution near the dielectric plate of surface-wave excited plasma, a discrepancy has been found between Thomson-scattering results and Langmuir-probe results. The reason might be due to possible distortion of the probe characteristics caused by the microwave field, but the phenomenon is not well understood yet. In this study, the effect of microwave field on the probe characteristics is investigated computationally using a fluid model. The effect of oscillating microwave field was modeled as an oscillating probe bias potential  $V_0 + V_1 \sin \omega t$  against field-free plasma. Electron and ion continuity, electron and ion momentum balance, and Poisson's equations are solved to obtain the current to a cylindrical probe as a function of the DC probe bias potential  $V_0$ . The results indicate that the probe V-I characteristic is distorted and the second derivative  $d^2I/dV^2$  shows a hump as if the population of electrons having energies around the hump is increased. The obtained  $d^2I/dV^2$  curves resemble some of measured probe characteristics.

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