Abstract Submitted
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Solutions of the low-frequency plasma sheath circuit equations MIRKO VUKOVIC, Tokyo Electron, US Holdings, Inc. — We derive a relation between the time derivatives of the current and voltage of the low-frequency plasma sheath. This relation is used to derive a first order differential equation for the electrical current in a driven series resistor, capacitor, and sheath circuit. Analytic and semi-numeric solutions are obtained for pulse and periodic excitations. We use these solutions to analyze the Langmuir probe response in some common diagnostic applications: the pulse excitation (Šamara et al, 2012)[1] and AC Bias (Van Nieuwenhove & Van Oost, 1988)[2] methods.

[1]Šamara et al. A dc-pulsed capacitively coupled planar Langmuir probe for plasma process diagnostics and monitoring, Plasma Sources Sci. Technol. 21 (2012) 065004
[2]Van Nieuwenhove & Van Oost, Novel Langmuir probe technique for the real-time measurement of the electron temperature, Rev.Sci.Instrum. 59(7),July 1988

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