Abstract Submitted
for the GEC15 Meeting of
The American Physical Society

The characteristics of RF modulated plasma boundary sheaths: An analysis of the standard sheath model[1] SCHABNAM NAGGARY, RALF PETER BRINKMANN, Ruhr University Bochum — The characteristics of radio frequency (RF) modulated plasma boundary sheaths are studied on the basis of the so-called "standard sheath model." This model assumes that the applied radio frequency ω_{RF} is larger than the plasma frequency of the ions but smaller than that of the electrons. It comprises a phase-averaged ion model – consisting of an equation of continuity (with ionization neglected) and an equation of motion (with collisional ion-neutral interaction taken into account) – a phase-resolved electron model – consisting of an equation of continuity and the assumption of Boltzmann equilibrium –, and Poisson's equation for the electrical field. Previous investigations have studied the standard sheath model under additional approximations, most notably the assumption of a step-like electron front [1]. This contribution presents an investigation and parameter study of the standard sheath model which avoids any further assumptions. The resulting density profiles and overall charge-voltage characteristics are compared with those of the step-model based theories.

[1] V.A. Godyak and Z.K. Ghanna, *Sov. J. Plasma Phys.* **6**, 372 (1979)

[1]The authors gratefully acknowledge Efe Kemaneci for helpful comments and fruitful discussions.

Schabnam Naggary
Ruhr University Bochum

Date submitted: 19 Jun 2015 Electronic form version 1.4