

Abstract Submitted
for the GEC11 Meeting of
The American Physical Society

Calculation of 2D charged particles density distributions and current-voltage characteristics of RF CCP discharge by means of Galerkin method¹ SERGEY DVININ, Lomonosov Moscow State university, Faculty of Physics, WON-TAEK PARK, ALEKSEY KALININ, ANDRIY KASHABA, NIKOLAY NIKISHIN, SEMES Co, Ltd, Republic of Korea — Effective using of low pressure CCP reactors demands uniformity and high density of plasma, and possibility to control reactor parameters. The simple way to optimize its characteristics is to use analytical model of the discharge, instead of (or in addition to) finite difference model. In the given work we offer the way to construct such model [1], based on Bubnov-Galerkin method. We have used eigenfunctions of the hydrodynamics equations (with ionization) and electromagnetic equations (accounting volume and surface waves), as functions to decompose exact solution. Space charge sheath is described by nonlinear phenomenological model. Specified approach allows to calculate discharge impedance and explains possibilities ambiguity of plasma characteristics, connected with electrodynamic resonances and chemical processes in plasma.

[1] S. Dvinin et al, Sov. Phys.: Fizika Plazmy, 9(5), 1058 (1983).

¹This work was supported by SEMES Co., Ltd., Republic of Korea.

Sergey Dvinin
Lomonosov Moscow State university, Faculty of Physics

Date submitted: 14 Jul 2011

Electronic form version 1.4