

Abstract Submitted
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The impulse exerted on the outward particle flux from a plasma ball¹ GENNADY MAKRINICH, AMNON FRUCHTMAN, H.I.T. - Holon Institute of Technology — A plasma ball has been produced near the anode in a configuration that, when magnetized, operates as a radial plasma source (RPS) [1]. The plasma particle flux outward of the plasma ball seems to be larger than that expected by the Langmuir relation in double layers [2]. The forced oscillations of a pendulum induced by the flow in the vicinity of the plasma ball are also of an unexpectedly large amplitude. We examine the possibility that the ions gain most of the momentum in the quasi-neutral plasma rather than in the double layer. The impulse enhancement is suggested to result from ion-neutral collisions in the plasma. The electric force is being felt by ions for a longer time; their residence time in the acceleration region is increased due to their slowing-down collisions with neutrals. We previously suggested the ion-neutral collisions as a source of impulse enhancement in the RPS of a radially- outward flow with magnetized electrons. [1] G. Makrinich and A. Fruchtman, Phys. Plasmas 16, 043507, 2009; Appl. Phys. Lett. 95, 181504 (2009). [2] I. Langmuir, Phys. Rev. 33, 954 (1929); B. Song, N. D'Angelo, R.L. Merlino, J. Phys. D: Appl. Phys. 24, 1789 (1991).

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