

Abstract Submitted
for the DPP06 Meeting of
The American Physical Society

Electromagnetic effect on a discharge generated in the window breakdown on a dielectric¹ HYUN-CHUL KIM, YE CHEN, JOHN VERBONCOEUR, University of California at Berkeley — In high-power microwave sources and rf accelerators, the suppression of undesirable dielectric window breakdown is an issue. The vacuum multipactor discharge [1], often considered a candidate which initiates window breakdown on the vacuum side, is an avalanche caused by secondary electron emission from the dielectric window. On the air side, the collision of electrons with the background gas alters the multipactor discharge significantly, and an rf discharge plasma is generated. The additional electron generation mechanism, electron-impact ionization, can lead to high electron density which significantly changes the wave impedance. In that regime, the self-consistent interaction between the wave and plasma can play an important role. Considering the wave equation for a nonuniform electron density distribution, the electromagnetic effect is investigated by using particle-in-cell simulations. [1] H. C. Kim and J. P. Verboncoeur, *Phys. Plasmas* **12**, 123504 (2005).

¹This work was supported in part by AFOSR Cathodes and Breakdown MURI04 grant FA9550-04-1-0369, AFOSR STTR Phase II contract FA9550-04-C-0069, and the Air Force Research Laboratory - Kirtland.

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Date submitted: 23 Jul 2006

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