

COUNTER-HPM WINDOW EXPERIMENTS AND THEORY*

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Microwave windows that protect sensitive electronics from high power microwaves are important to military and civilian applications. We are testing a microwave window with crosspolarized, inter-digitized conducting strips that are biased at moderate (100's V) to high voltage (kV's) DC. The goal is to determine whether the microwave breakdown threshold can be controlled by argon gas pressure [1] and DC bias voltage. DC Paschen curves have been measured in argon for these window-structures. Experiments are underway to expose the window-structures to high power (10-100 MW) microwaves in a single output waveguide of the UM relativistic magnetron facility. Theory and simulations will utilize previous multipactor susceptibility curves [2] for perpendicular and parallel DC fields to evaluate the effect of DC fields on multipactor breakdown of windows.

1) Y.Y. Lau, J.P. Verboncoeur, and H.C. Kim, "Scaling Lws for window breakdown in vacuum and collisional regimes", *Applied Phys. Lett.* 89 261501 (2006)

2) L.K. Ang, Y.Y. Lau, R.A. Kishek, and R.M.Gilgenbach, "Power Deposited on a Dielectric by Multipactor Discharge", *IEEE Trans. Plasma Science*, v26, 290 (1998)

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