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EXPERIMENTAL STUDY OF MULTIPACTOR SUPPRESSION IN DIELECTRIC MATERIALS

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A novel coaxial resonator to investigate two-surface multipactor discharges on metal and dielectric surfaces in the gap region under vacuum conditions ($\sim 10^{-8}$ mbar) has been developed and tested. The resonator is ~ 100 mm in length with an outer diameter of ~ 60 mm (internal dimensions). A pulsed RF source delivers up to 30 W average power over a wide frequency range 650-900 MHz to the RF resonator. The incident and reflected RF signals are monitored by calibrated RF diodes. An electron probe provides temporal measurements of the multipacting electron current with respect to the RF pulses. In this paper we compare and contrast the results from the RF power tests of the alumina (97.6% Al_2O_3) and quartz samples without a coating, “the non-coated samples” and the Alumina and quartz samples with a TiN coating in order to evaluate a home made sputtered titanium nitride (TiN) thin layers as a Multipactor suppressor.

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Experiments and Diagnostics

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