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Equivalent network modeling to simulate electrical discharges

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Abstract-

This paper presents an integral method developed to simulate the current waveform generated by electrical discharges in overvoltaged air gaps. The electrodes/dielectric physical configuration is modeled with a schematic grid of nonlinear impedances and the resulting circuit is solved utilizing the standard SPICE network simulator. Different electrode geometries have been investigated and experimental data have been used to validate the simulation results.

Index Terms- Discharge current, electrostatic discharges, measurement, numerical analysis, spheres.

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