Abstract Submitted
for the GEC09 Meeting of
The American Physical Society

Electron-Beam Generated Air Plasma Measurements: Effect of Reduced Electric Field[1] ROBERT VIDMAR, ANUSHA UPPALURI, University of Nevada, Reno, KENNETH STALDER, Stalder Technologies and Research — Measurements of electron density and momentum-transfer collision rate are discussed for plasma generated by an electron beam in air from 1 mT to 636 T as a function of the reduced electric field. A 100 keV electron source operating at a few mA is used to ionize air. A 10 GHz in-phase and quadrature microwave detector measures the electron number density and momentum-transfer collision rate. Optical emissions at 391.4 nm from N_2^+ provide an estimate of volumetric ionization profile along the microwave propagation path. Grids in the air-plasma test cell provide a means of imposing a reduced electric field, while the electron beam ionizes air. Results are discussed in the context of electron density as a function of reduced electric field and pressure.

[1]This material is based on research sponsored by the Air Force Research Laboratory, under agreement numbers FA9550-05-1-0087 and FA9550-07-1-0021.

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Date submitted: 14 Jul 2009 Electronic form version 1.4