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X-Ray Induced Breakdown in Air with High Reduced Electric Field[1] ROBERT VIDMAR, ANUSHA UPPALURI, University of Nevada, Reno — An X-ray pulse was used to initiate breakdown of laboratory air at a high reduced electric field in a parallel plate geometry. The X-ray pulse is from 100 ns to several ms in duration and originates from a A 100 keV electron beam operating at a few mA. The X-ray pulse is shown to represent a volumetric ionization rate in air and the count rate from an X-ray detector is related to the volumetric ionization rate. An air-chemistry code is used to model the temporal change in electron density as a function of volumetric ionization rate and reduced electric field. Measurements of X-ray induced breakdown demonstrate the sensitivity of systems that operate with high reduced electric field to pulsed ionizing radiation.

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