Geophysical Research Abstracts
Vol. 14, EGU2012-9369, 2012
EGU General Assembly 2012

A direct search for energetic electrons produced by laboratory sparks

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High-voltage sparks in the lab unexpectedly emit x-rays with energies up to several hundred keV. These x-rays have been observed repeatedly and can only be produced by bremsstrahlung, impling the presence of a population of energetic electrons. Such energetic electron and x-ray production may be important for the physics of streamers, spark discharges, and lightning, and has been suggested as directly related to the production of terrestrial gamma-ray flashes. We present the results of the first direct search for energetic electrons produced by a lab spark. Small electrically-isolated scintillators are placed at various locations near the spark gap of a 2 MV Marx generator and the resulting signals are recorded. We present results on the spatial, temporal, and statistical variability of signals produced by energetic electrons and compare our results to predictions of energetic electron production from the literature.