



"Beam-Bulk" streamer modeling for the production of TGFs.

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The generation of X- and Gamma-rays in electric discharges has been studied intensively since the discovery of Terrestrial Gamma-ray Flashes (TGFs) by the Compton Gamma-ray Observatory in 1994. Emissions are bremsstrahlung from energetic electrons accelerated in a discharge electric field. Whereas observations now are many, from thunderstorm, lightning and in the laboratory, the phases of the discharge where emissions are generated are still debated and several processes for electron acceleration have been put forward by theorists. In this paper we present preliminary results from a “beam-bulk” model to experiment with the acceleration of low energy electrons in the enhanced electric field of streamers. The hybrid model contains a Monte Carlo part that simulates electrons of high energy while the fluid part simulates the low energy electrons and ions. The preliminary results show the emissions of high energy electrons from a self-consistent simulation of streamer discharge and their impact on the streamer propagation.