

Abstract Submitted
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Towards a quantitative model for streamer coronas¹ UTE EBERT,
CWI Amsterdam, Eindhoven UT — Processes with many streamers appear in corona reactors, in high voltage technology, in the streamer corona of lightning leaders and in enormous sprite discharges high above thunderclouds. Recent experiments have shown that streamers can vary largely depending on the voltage source and electrode geometry, and simulations now explain and model essential features of single streamers. However, the older phenomenological models for complete streamer coronas do not include the newer insights, and some also suffer from electrodynamic inconsistencies. I will present the constructive elements of a new break-down model, and I will discuss, in particular, how streamer heads with their internal variability can be characterized by only two parameters: streamer diameter and maximal electric field at the head. The new model eventually should be able to predict properties of streamer coronas as in lightning that are experimentally difficult to explore.

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