

# Branching Patterns and Stepped Leaders in an Electric-Circuit Model for Creeping Discharge

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(Submitted on 7 Apr 2010)

We construct a two-dimensional electric circuit model for creeping discharge. Two types of discharge, surface corona and surface leader, are modeled by a two-step function of conductance. Branched patterns of surface leaders surrounded by the surface corona appear in numerical simulation. The fractal dimension of branched discharge patterns is calculated by changing voltage and capacitance. We find that surface leaders often grow stepwise in time, as is observed in lightning leaders of thunder.

Comments: 5 pages, 5 figures

Subjects: **Pattern Formation and Solitons (nlin.PS)**; Adaptation and Self-Organizing Systems (nlin.AO); Plasma Physics (physics.plasm-ph)

Cite as: [arXiv:1004.1021v1](#) [nlin.PS]

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[v1] Wed, 7 Apr 2010 07:52:39 GMT (688kb)

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