

Reference: **ISH2015_420**



Type:
ISH Collection

Title:
An analysis of lightning breakdown process and the analogies to switching breakdown process

File Size:3,4 MB

Year: 2015

Abstracts

In this paper, the authors would like to discuss the existence of the leader discharge and thermal ionisation by lightning voltages, which has been controversial by this type of voltages. The argumentations are based on the measurement results by positive lightning voltages and long rod-plane electrode configurations. During the measurements by lightning voltages, the authors observed a canal-like discharge, which does not necessarily lead to a flashover. At least optically, it shows a big similarity to the stable leader discharge by switching overvoltages. Therefore, the goal of this paper is to compare the observed leader-like canal by lightning to the stable leader by switching voltages in three aspects: 1) linear charge density and propagation velocity, 2) potential gradient, and 3) Ud-s-characteristic. In all of the three aspects, the canal exhibits similar properties as the leader. Consequently, the thermal ionisation can be expected by lightning as well as by switching voltages.