



Abstract Book

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Upward connecting leader behavior during lightning attachment process

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The physical mechanism of lightning attachment to grounded structures is one of the most important issues in lightning physics research and it is the basis for the design of the lightning protection systems. During the propagation of the downward leader towards ground, the inception of one or more upward connecting leaders may start directly from the ground or from objects or humans nearby. Most of what is known about the attachment process comes from leader propagation models that are mostly based on laboratory observations of long electrical discharges or from observations of lightning attachment to tall structures. In this paper, we present the characteristics of leaders during the attachment process to common structures that are present in almost every city (in this case, buildings under 60 m in São Paulo City, Brazil). We use high-speed videos together with electric field and upward connecting leader current measurements to analyze the propagation of downward leaders and the inception and propagation of upward connecting leaders. Parameters like speed, charge and current of upward connecting leaders used in lightning attachment models and in lightning protection standards, are revealed in this work.