

An algorithm for evaluation of lightning electromagnetic fields at difference distances with respect to lightning channel

ABSTRACT

The analytical field expressions are proposed to estimate the electromagnetic fields associated with vertical lightning channel at an observation point directly in the time domain using current and geometrical parameters. The proposed expressions embrace a large number of channel base current functions and widely used engineering current models. Moreover, they can be joined with different coupling models for evaluation of lightning induced voltage when they provide different required field components directly in the time domain. The data from measured fields and simulated fields from previous works were employed to validate the proposed field expressions. The simulated results were compatible with both computed field values from previous studies and the measured fields.

Keyword: Lightning channel; Electromagnetic fields