

Evaluation of the electromagnetic fields due to lightning channel with respect to the striking angle

ABSTRACT

This paper reviews the different engineering return stroke current models and determines the current wave shape along the lightning channel. The general equations for electromagnetic fields due to vertical and slope lightning channel in the time domain are expressed using dipole method, extended Maxwell's equations, FDTD and Gauss-Lobatto quadrature methods. In addition, effect of striking angle on the electromagnetic field values is also considered using a current sample from triggered lightning measurement. Results are then validated and compared with the measured values.

Keyword: FDTD; Lightning channel; Maxwell's equations; Return stroke current