

Transient responses due to various burial depths on a single long horizontal ground conductor

ABSTRACT

The purpose for this paper is to determine the effective burial depth for a single long horizontal ground conductor which is part of a lightning protection system. In this study, transient responses behaviours of the ground conductor towards various burial depths with lightning excitation are presented. The simulation is done in the time domain using TLM which is found to be the ideally suited numerical method due to its many advantages. The excitation voltage is injected at one end of the ground conductor, represented by a derivative Gaussian pure injection voltage source. Results are presented regarding various burial depths at each node of the ground conductor and a good agreement with an IEEE standard is shown.

Keyword: BEM; Derivative Gaussian; FDTD; FEM; Grounding conductor; MoM; TDIE; TLM; Transient response; Voltage sag