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# ESTIMATION OF LIGHTNING STRIKING DISTANCE TO HORIZONTAL CONDUCTOR

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## Abstract:

This paper attempts to investigate the horizontal conductor lightning striking distance estimation. An electromagnetic model was proposed to model a vertical downward lightning leader and an infinite grounded horizontal conductor by using the charge simulation method (CSM) to calculate the lateral striking distance. A formula between the lateral striking distance, the lightning current, and the horizontal conductor height was estimated. The proposed formula was compared with electromagnetic model and previous formulas. By the use of a similar methodology, a horizontal conductor voltage coefficient had been proposed and estimated. The proposed voltage coefficient was used to modify the electrogeometric model in order to study lightning striking rates of an unshielded horizontal conductor for different heights at either AC or DC voltages.

## Keywords:

Electromagnetic theory, Electro-geometric model, horizontal conductor, lightning leader, striking distance, charge simulation method, conductor voltage.

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