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**Experimental Evaluation of Impulsive Impedance in Grounding Grids Subjected to Current Impulses**

## Abstracts

In this paper an experimental study for the analysis of impulsive impedance behavior in a grounding grid was realized. In order to evaluate the impulsive impedance, electric current impulses were applied to the soil (representing lightning discharges) with several front times and amplitudes. So, a high current impulse generator was used. The impulse generator was charged with different voltage levels from 15 kV to 35 kV. The configuration of the generator initially chosen provided the injection of current impulses  $8/20 \mu\text{s}$  at different amplitudes. Also, in order to analyze the behavior of the impulsive impedance at different wave front times, the capacitor's charging voltage was established in 20 kV and the impulse generator parameters (Resistor, Inductor and Capacitor) were varied. The injection of current impulses into the soil was made possible using a steel grounding rod coated with copper buried into the ground. The data acquisition was performed with a four-channel digital oscilloscope. The applied voltage was measured using a high voltage probe and current was measured on a shunt resistor. The results showed that when the variable under analysis was the charging voltage of the impulse generator, impulsive impedance became increasingly lower with the rising voltage applied to the soil. The results showed that when the variable under analysis was the front time of the applied current signal, the impulsive impedance was inversely proportional to the front time of the current signal applied.

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More Informations :

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