

**Induced Voltages on Distribution Lines due to Lightning Discharges
on nearby Metallic Structures**

Alexandre Piantini

Institute of Electrotechnic and Energy (IEE/USP)

Jorge M. Janiszewski

Polytechnic School (EPUSP- PEE)

University of São Paulo

Av. Prof. Luciano Gualberto, 1289,
05508-900, São Paulo - SP, Brazil

Abstract - This paper presents a numerical method for calculation of voltages induced on overhead lines due to lightning discharges striking a metallic structure in its vicinity. The calculation is done from the determination of the electric and magnetic potentials associated to the charges in the return stroke channel and to the currents that propagate in the channel and in the structure. It is shown that in this situation the induced voltages may differ significantly from those originated by lightning discharges direct to the ground. Comparisons between measured and calculated voltage waveshapes confirmed the validity of the procedure.