

ANALYZING INDUCED VOLTAGES INSIDE A LPS

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ABSTRACT

This work presents a computational analysis of transient currents on Lightning Protection Structures (LPS) of residential buildings and the electromagnetic field achieved inside them that induces voltages on internal circuits when lightning directly strikes the LPS. The approach adopted offers flexibility to design and discuss some kinds of LPS or their geometric configurations. It allows us to find the best protection at each situation and to take into account financial aspects as to the number of conductors and insulation levels required.

The numeric technique TLM (Transmission Line Modelling Method) was applied to determine the transient currents caused by lightning on the LPS and the induced transient voltages on circuits localized inside them. Using this technique in one-dimension and Cartesian expressions in time domain to calculate the electromagnetic field, all conductors and the lightning channel were considered such as transmission lines.