

Lightning-Induced Voltages on Complex Power Systems by Using CiLIV: The Effects of Channel Tortuosity .

Amedeo Andreotti , *Senior Member, IEEE*, Alexandre Piantini, *Senior Member, IEEE*, Antonio Pierno, and Renato Rizzo, *Senior Member, IEEE*

ABSTRACT

Recently, Andreotti *et al.* (2015) have presented a new tool for lightning induced voltage calculations on power networks. This tool, named Circuit for Lightning Induced Voltage (CiLIV), has been initially developed for straight and vertical lightning channels; afterwards, the tool has been extended to evaluate induced voltages produced by tortuous lightning channels. However, in the aforementioned studies, only simple power network configurations have been examined. Therefore, aim of this paper is twofold: 1) to apply CiLIV to more complex network configurations, that is, complex networks equipped with transformers, surge arresters, groundings, and so on; 2) to investigate the effects of channel tortuosity on the voltages induced in these complex networks.

Keywords: Channel tortuosity, complex power networks, induced voltage calculation, lightning, power systems simulators