

## Modeling of Surge Corona Using Type94 in Overhead Power Lines

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**Abstract :** Corona in the HV overhead transmission lines is an important source of attenuation and distortion of overvoltage surges. This phenomenon of distortion, which is superimposed on the distortion by skin effect, is due to the dissipation of energy by injection of space charges around the conductor, this process with place as soon as the instantaneous voltage exceeds the threshold voltage of the corona effect conductors. This paper presents a mathematical model to determine the corona inception voltage, the critical electric field and the corona radius, to predict the capacitive changes at conductor of transmission line due to corona. This model has been incorporated into the Alternative Transients Program version of the Electromagnetic Transients Program (ATP/EMTP) as a user defined component, using the MODELS interface with NORTON TYPE94 of this program and using the foreign subroutine. For obtained the displacement of corona charge hell, dichotomy mathematical method is used for this computation. The present corona model can be used for computing of distortion and attenuation of transient overvoltage waves being propagated in a transmission line of the very high voltage electric power.

**Keywords :** high voltage, corona, Type94 NORTON, dichotomy, ATP/EMTP, MODELS, distortion, foreign model

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