

# Simulation of glow corona discharge on airfoils

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*Abstract*—We model and simulate the glow corona discharge of airfoils in the presence of an external electric field and wind velocity field. The discharge of glow corona is modeled as an emission of positive ions when the electric field exceeds an electron multiplication condition. The numerical model we developed consists of a set of electrostatic equations associated with positive ions and the electron multiplication equation. This simple model paves the way towards developing predictive simulations of glow corona and transition into streamers for realistic configurations relevant to technological applications and lightning research. We present numerical results to study the onset of the glow corona and the effect of wind on this phenomenon.