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## DC Flashover Criterion and Discharge Elongation Mechanism in an Air -Electrolyte Interval

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**Abstract:** For a better understanding of the flashover criterion and discharge elongation mechanism, an experimental study was carried out, on a laboratory circular model, in order to find the critical voltage and current according to the pollution amount. A simulation study was then carried out to assess the electric field distribution and its average value in the vicinity of the discharge that corresponds to the experimental value of critical conditions of flashover. The obtained results show that:

-The average value of the electrical field in the gap Discharge-Electrolyte of the flashover is high compared to the average electric field obtained in works devoted to the study of the breakdown of the air in the vicinity of an electrical discharge. The average field value of these two systems is lower than the average field value in a metal pin-water electrode system; this result confirms that the presence of an electric discharge weakened the dielectric rigidity of the air for both polarities.

-The maximum values of the electrical field in the vicinity of the discharge, in positive and negative polarity, are high compared to the value of the disruptive field of air at atmospheric pressure.

**Key words:** High voltage- Insulator- Pollution- Electric discharge- Flashover- Critical conditions- Electric field distribution.