

## Characterization preliminary breakdown in the measured lightning electric fields

### ABSTRACT

In this study, characterization of measured electric fields due to lightning channel was done. Likewise, previous studies on this case were reviewed and discussed accordingly. Furthermore, preliminary breakdown was done in detail and it was indicated on the real measured electric fields and the results were discussed. The behavior of preliminary breakdown signal was observed. This study shows that it will be easier to design filtering of the preliminary breakdown. The result show compelling agreement with theoretical predictions and significant improvement over previous effort by Clarence and Malan, Weidman and Krider and Rakov, et al. the work presented here has profound implications for future studies of Preliminary Breakdown and may one day help solve the problem of designing protection level for Electrical Engineers. The results show that the occurrence of PBP is in between 2 to 10 milliseconds before return stroke as agreed with Clarence and Malan.

**Keyword:** Lightning; Preliminary breakdown; Electric field