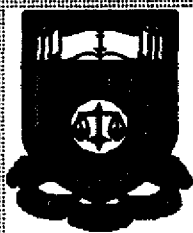


**STUDY ON CORONA POWER LOSS AND AUDIBLE NOISE UNDER  
DIFFERENT ELECTRODE CONFIGURATIONS**

**Thesis presented in partial fulfilment for the award of the  
Bachelor of Electrical Engineering (Hons) of  
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## **Abstract**

Corona power loss, radio interference and audible noise has been studied extensively all over the world but most of the studies are confined to EHV transmission systems. Very scanty information is available in the literature about power loss and audible noise due to local corona in machines and apparatus.

In this thesis, results of an experimental study on power loss and audible noise due to corona under different electrode configurations have been reported. Both, high voltage AC and DC has been used for the studies. Standard electrode configurations such as sphere-plane, rod-plane, rod-rod etc. has been used, keeping in view that the insulation characteristics of most of the machines and apparatus may be approximated to the characteristic of these configurations.

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## CHAPTER 1

### 1.0 INTRODUCTION

Corona is a discharge in the gas which appears at points with the highest electric field intensity, namely at sharp points or where the electrodes are curved or on transmission lines. It can be observed as a bluish luminescence glow accompanied by hissing noise, and the air surrounding the corona region becomes converted into ozone. Corona is responsible for considerable loss of power from high voltage transmission lines, and it also leads to the deterioration of insulation due to the combined action of the bombardment of ions and the chemical compounds formed during discharges. Corona also gives rise to audible noise and radio interference [1].

On the high voltage conductors at high pressure, there is a distinct difference in the usual appearance of the corona under positive and negative polarities of the applied voltage. When the voltage applied is positive, corona appears as a uniform bluish white sheath over the entire surface of the conductor. On the other hand, when the applied voltage is negative, the corona will appear like reddish-glowing spots distributed along the length of the conductor [1]. Other than that, the corona discharge is also accompanied by some other observable effects, such as audible noise, electric current, mechanical vibrations and chemical reaction [2]. The chemical reactions accompanied with corona in air, produce ozone and nitrogen oxides [1].