



**School of Engineering and Energy**

## **ENG 460: Engineering Thesis**

*A thesis report submitted in partial fulfillment of the requirements for the degree of Bachelor of Engineering to the School of Engineering and Energy*

# High Frequency Modeling of a Transformer Winding

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# Abstract

Major faults in power transformer windings usually originate from small charges called partial discharges (PD). These discharges could lead to a breakdown in insulation and ultimate failure in the power transformers if they are allowed to develop. Therefore, this thesis will present and develop a high-frequency model of power transformer winding, which can detect the propagation of high-frequency partial discharges in a continuous disc type of high-voltage transformer winding. The lumped parameter model will be used to simulate the windings of the power transformer. This model represents the transformer winding with two discs of the winding represented by a single circuit. PD will be injected at different locations along the model. Using the knowledge of the frequency response of the winding within the faulty transformer, will help locating the partial discharges on the windings.

Locating PDs in high-voltage power transformers, is useful for those who maintain the equipment.

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