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# Radio Aurora Explorer Nano-Satellite Radar: Data Inversion

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**RADIO AURORA EXPLORER**  
**NANO-SATELLITE RADAR: DATA INVERSION**

*A Major Qualifying Project submitted to the faculty of  
WORCESTER POLYTECHNIC INSTITUTE*

*And performed at  
SRI INTERNATIONAL*

*In partial fulfillment of the requirements for the  
Degree of Bachelor of Science*

Project Report Prepared By

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10th March 2009

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## **ABSTRACT**

SRI International, in junction with University of Michigan, is working on the Radio Aurora eXplorer (RAX) mission. This mission aims to study the intensity of plasma irregularities in the aurora region's ionosphere. Our Major Qualifying Project was concerned with constructing a realistic simulation of the bi-static satellite-radar system of the mission and produce synthetic data. Moreover, it was also required to develop de-convolution algorithms to invert the synthetic data so as to deduce the intensity and magnetic field alignment information of the irregularities.

*The complete report will be uploaded after review by SRI International.*