

# A Search for Sterile Neutrinos at the NO $\nu$ A Far Detector

A DISSERTATION PRESENTED  
BY  
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### ABSTRACT

We measured things. And searched for other things. Here is what we found, please let me graduate.

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THIS IS THE DEDICATION.

# Acknowledgments

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# 0

## Introduction

# 1

## A Brief History of Neutrinos

### I.I POSSIBLE EVIDENCE OF STERILE NEUTRINOS

# 2

## Theory of Neutrino Oscillations

2.1 STANDARD 3-FLAVOR OSCILLATIONS

2.2 MATTER EFFECTS

2.3 STERILE NEUTRINOS

# 3

## The NO $\nu$ A Experiment

### 3.1 INTRODUCTION

# 4

## Experiment Simulation

# 5

## Event Reconstruction

5.1 RECONSTRUCTION CHAIN

5.2 CALIBRATION

# 6

## Neutral Current Event Selection

# 7

## Neutral Current Disappearance Analysis



# 8

## Analysis Results and Systematic Errors

# 9

## Conclusions and Moving Forward

The results of this analysis are consistent with no sterile neutrinos.

## References



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