THE PENNSYLVANIA STATE UNIVERSITY Test
SCHREYER HONORS COLLEGE

DEPARTMENT OF DEPARTMENT

TITLE OF THESIS

NAME
SEASON NOW

A thesis
submitted in partial fulfillment
of the requirements
for baccalaureate degrees
in Major1 and Major2
with honors in Area of Honors

Reviewed and approved* by the following:

Some Person
Professor of Something
Thesis Supervisor

Some Other Person
Professor of Something Else
Some Other Position
Honors Adviser

*Signatures are on file in the Schreyer Honors College.

Abstract

Abstract abstract abstract. Abstract? Abstract! Abstract...

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Acknowledgements

To Mr. Scruffles.

Chapter 1

Introduction and Historical Review

1.1 Introduction

Blah blah blah. Here is an example of how to include and cite a figure: see Figure 1.1

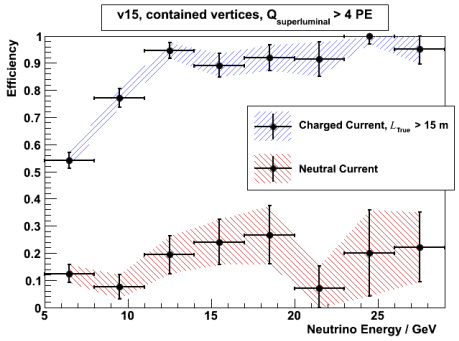

Figure 1.1: Caption to go underneath figure

1.2 Literature Review

Blah blah blah Here's an example of a table: see Table 1.1.

Parameter	Current Best Value
Δm^2_{21}	$7.50^{+0.19}_{-0.20} \times 10^{-3}$ eV^2
$\lvert\Delta m^2_{32}\rvert$	$2.32^{+0.12}_{-0.08} \times 10^{-5}$ eV^2
$\sin^2(\theta_{12})$	$0.857^{+0.023}_{-0.025}$
$\sin^2(2\theta_{23})$	> 0.95
$\sin^2(\theta_{13})$	0.098 ± 0.013

Table 1.1: Name of table for caption above table

Here's an example of an equation and some math:

$$U = \begin{pmatrix} c_{12}c_{13} & s_{12}c_{13} & s_{13}e^{i\delta} \\ -s_{12}c_{23} - c_{12}s_{23}s_{13}e^{i\delta} & c_{12}c_{23} - s_{12}s_{23}s_{13}e^{i\delta} & s_{23}c_{13} \\ s_{12}s_{23} - c_{12}c_{23}s_{13}e^{i\delta} & -c_{12}s_{12} - s_{12}c_{23}s_{13}e^{i\delta} & c_{23}c_{13} \end{pmatrix}, \tag{1.1}$$

with $c_{ij} = \cos\theta_{ij}$ and $s_{ij} = \sin\theta_{ij}$.

Here's an example citation: [1].

1.3 Thesis Outline

Chapter 2

Problem Statement

2.1 Problem Definition

2.2 Canonical Units Definition

2.3 Parameter Definition

2.4 Time Optimization (probably needs rewording)

Chapter 3

Methodology

3.1 Particle Swarm Optimization Overview

3.2 Problem Implementation

Stuff detailing the general rk-dopri-5 algorithm goes here

3.2.1 MATLAB

MATLAB implementation details go here e.g. ODE45, etc.

3.2.2 C++ Single Threaded

Details about Boost libraries, timers, etc. go here

3.2.3 C++ Parallelization

Details about OpenMP go Test

Chapter 4

Results

4.1 Numerical Results

4.2 Rehydration Results

4.3 Speedup

Bibliography

[1] J. Beringer et al. Review of particle physics. *Phys. Rev. D*, 86:010001, Jul 2012.