

# MEASURING SOLAR NEUTRINO FLUX IN THE SNO+ PURE SCINTILLATOR PHASE

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A DISSERTATION

in

**Physics and Astronomy**

Presented to the Faculties of the University of Pennsylvania

in

Partial Fulfillment of the Requirements for the Degree of

**Doctor of Philosophy**

2018

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# **MEASURING SOLAR NEUTRINO FLUX IN THE SNO+ PURE SCINTILLATOR PHASE**

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*I did it on my own. Get rekt suckas*

## Acknowledgements

I did this mostly on my own. Anyone else who helped did so in such an insignificant way that I've by now forgotten about it.

## **ABSTRACT**

### **MEASURING SOLAR NEUTRINO FLUX IN THE SNO+ PURE SCINTILLATOR PHASE**

Eric Marzec

J.R. Klein

Described here is a measurement of the solar neutrino flux as measured by SNO+.

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# Chapter 1

## Introduction

### 1.1 Neutrinos

Neutrinos are a spin- $\frac{1}{2}$  particles that are pretty cool.

#### 1.1.1 Solar Neutrinos

#### 1.1.2 Neutrino Oscillations

##### 1.1.2.1 Vacuum Oscillations

##### 1.1.2.2 The MSW Effect

#### 1.1.3 Neutrino Experiments

##### 1.1.3.1 Solar Experiments

##### 1.1.3.2 Terrestrial Experiments

### 1.2 The SNO+ Detector

#### 1.2.1 The Detector in Brief

It's a big ole ball of glowing goo

### 1.2.2 Electronics And DAQ

### 1.2.3 Scintillator

Its just magic.

## 1.3 Signal Extraction

### 1.3.1 Data Cleaning

#### 1.3.1.1 CAEN Cut

#### 1.3.1.2 Getting rid of flashers in scintillator

It was really EZ

## 1.4 Chameleons

## 1.5 Conclusion

Neutrinos don't even exist

## Chapter 2

# Aims

### 2.1 Junk

This is where I put one of my very own defined functions!

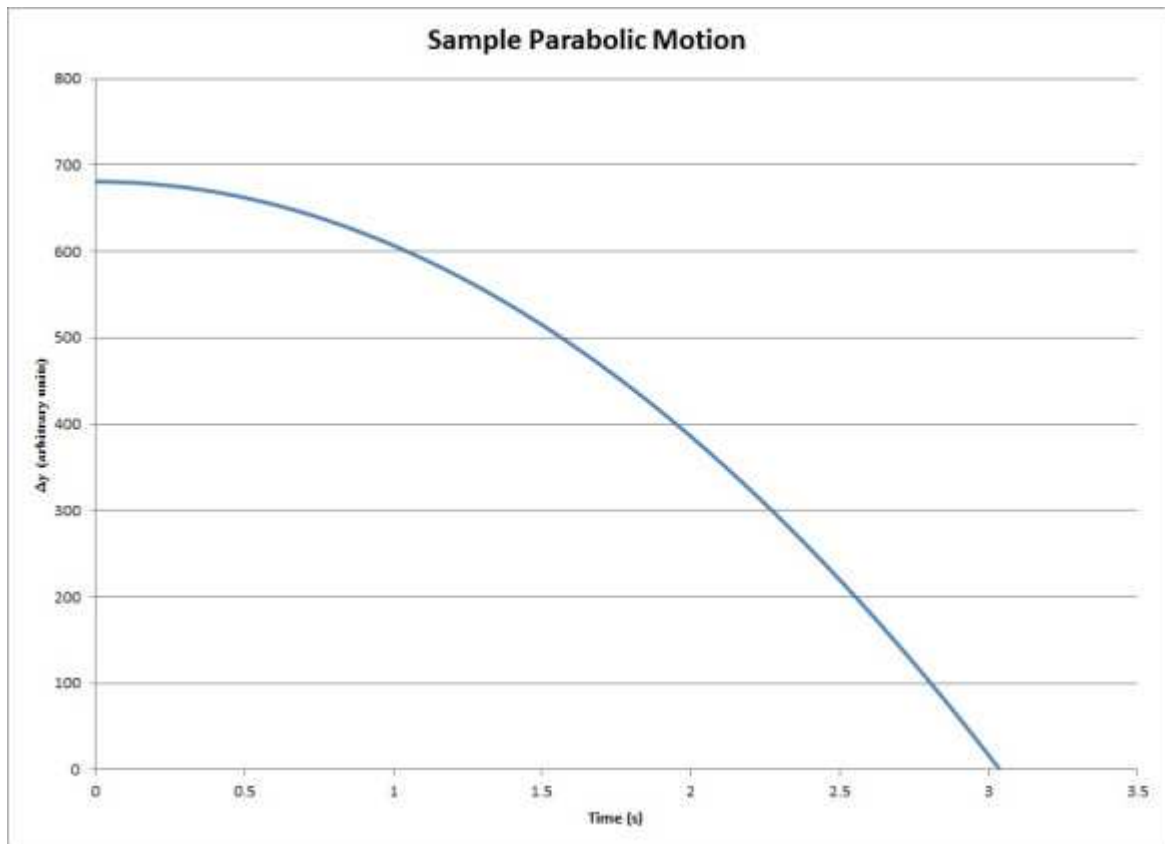
$uv$ -plane

$$\frac{\partial f}{\partial x}$$

### 2.2 Blah

| $k$ | $x_1^k$    | $x_2^k$    | $x_3^k$     | remarks              |
|-----|------------|------------|-------------|----------------------|
| 0   | -0.3       | 0.6        | 0.7         |                      |
| 1   | 0.47102965 | 0.04883157 | -0.53345964 | *                    |
| 2   | 0.49988691 | 0.00228830 | -0.52246185 | $s_3$                |
| 3   | 0.49999976 | 0.00005380 | -0.52365600 |                      |
| 4   | 0.5        | 0.00000307 | -0.52359743 | $\epsilon < 10^{-5}$ |
| 7   | 0.5        | 0          | -0.52359878 | $\epsilon < \xi$     |

**Table 2.1:** This is a table with *very* important values!!!!



**Figure 2.1:** Here is parabolic motion as measured with science.

## Chapter 3

# Conclusion

### 3.1 Wrapping up...

I rest my case.

# Appendices

## Appendix A

# Some Appendix

### A.1 first section



**Appendix B**

**Another Appendix**

# Glossary

## Roman Symbols

**M**            Mass of object, page 9

## Greek Symbols

$\tau$             Optical depth, page 9

## Superscripts

<sup>\*</sup>            Conjugate, page 9

## Subscripts

$\odot$             relating to the sun (Sol), page 9

## Other Symbols

**11HUGS**    11 Mpc Halpha and Ultraviolet Galaxy  
Survey, page 9

## Acronyms

**2MASS**      Two-Micron All Sky Sruvey, page 9

## References