

# Thesis

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2024-09-06

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# Preface

This is a Quarto book.

To learn more about Quarto books visit <https://quarto.org/docs/books>.

blablabla

bal

We know from *the first fundamental theorem of calculus* that for  $x$  in  $[a, b]$ :

$$\frac{d}{dx} \left( \int_a^x f(u) du \right) = f(x).$$

# Abstract

## **Zusammenfassung**

# 1 Introduction

This is a book created from markdown and executable code.

See Knuth (1984) for additional discussion of literate programming.

## 1.1 Test section

text

## **2 Cosmic particles**



### **3 The IceCube Neutrino Observatory**

## **4 Software Packages**

### **4.1 skyllh**

#### **4.1.1 stacking**

#### **4.1.2 Seyfert Flux**

### **4.2 p1skyllh**

### **4.3 icetray**

#### **4.3.1 ml\_suite**

#### **4.3.2 photospline**

## **5 Improved Point Source Analysis**

**5.1 PS likelihood**

**5.2 observables reconstruction**

**5.3 KDE**

**5.4 PS methods, skyscan, catalog search,  
binomial test**

**5.5 performance plots. Biases, sens, dp**

**5.6 results**

## **6 Seyferts**

**6.1 seyfert neutrino connection**

**6.2 core-corona model**

**6.3 BASS catalog**

**6.3.1 swift**

**6.3.2 nustar?**

**6.4 PS methods, stacking**

**6.5 performance plots. Biases, sens, dp**

**6.6 results**

## **7 Extended Point Source Analysis**

### **7.1 IC79 subselection**

### **7.2 skykde tool**

### **7.3 performance plots. Biases, sens, dp**

### **7.4 Results**

### **7.5 Future work**

#### **7.5.1 normalizing flows**

#### **7.5.2 likelihood free inference**

## 8 Conclusion

## **9 Acknowledgements**

## References

Knuth, Donald E. 1984. “Literate Programming.” *Comput. J.* 27 (2): 97–111. <https://doi.org/10.1093/comjnl/27.2.97>.