

Something about Taus and Flavour in Icecube

Dissertation

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Colophon

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Abstract

In icecube, we have many neutrinos, select some very high energy ones, spend 1 year with them to group them in three flavour categories. I guess we will learn something about where they came from by doing this. Pretty normal stuff, not at all racist.

zusammenfassung

Im IceCube haben wir viele Neutrinos, von denen wir einige mit sehr hoher Energie auswählen, verbringen 1 Jahr mit ihnen, um sie in drei Geschmackskategorien einzuteilen. Ich vermute, dass wir auf diese Weise etwas darüber erfahren, woher sie kommen. Ziemlich normales Zeug, ganz und gar nicht rassistisch.

Notes

Add a brief introduction.	1
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Add a brief introduction.

A BRIEF INTRODUCTION OF NEUTRINOS IN ASTROPARTICLE PHYSICS

Neutrinos in High Energy Universe

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2.1 Fundamental Properties of Neutrinos

{sec:nu_properties}

2.1.1 Masses and oscillations

2.1.2 Standard Model Interactions

2.1.3 Properties beyond standard model

2.2 Cosmic Rays

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2.3 Cosmic Neutrinos

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3.1.1 Detector

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3.1.4 Optical Properties of the South Pole ice

3.2 Detection of Neutrinos

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TAU NEUTRINO IDENTIFICATION AND FLAVOUR COMPOSITION ANALYSIS

Event Samples and Reconstruction of High Energy Neutrinos in IceCube

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{ch:nu_samples}

Flavour Composition Analysis

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{ch:analysis}

RESULT

Results of Flavour Analysis Using 12 years of HES data

6

{ch:HES12}

Sensitivity of IceCube-Gen2 to measure flavour composition

8

{ch:gen2}

APPENDIX

