Searches for Supersymmetry using the α_T variable with the CMS detector at the LHC

Darren Burton

Imperial College London
Department of Physics

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Abstract

Supersymmetry does not exist

Declaration

This thesis is the result of my own work, except where explicit reference is made to the work of others, and has not been submitted for another qualification to this or any other university. This dissertation does not exceed the word limit for the respective Degree Committee.

Darren Burton

Acknowledgements

Of the many people who deserve thanks, some are particularly prominent....

Preface

This thesis will never be read by anyone.

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"The Universe is about 1,000,000 years old."

— Matthew Kenzie, 1987-present : Discoverer of the Higgs Boson.

Chapter 1

Introduction

Introduce the thesis [1]

Chapter 2

A Theoretical Overview

The hard part the thesis

2.1 The Standard Model

The SM is great

2.2 Motivation for Beyond the Standard Model Physics

Dark Matter etc

2.3 Supersymmmetry

What is this theory that doesn't exist all about?

Chapter 3

The CMS detector

3.1 CMS detector

Detector stuff

3.2 Object Definition

Object stuff

3.2.1 Jets

3.2.2 B-tagging

Chapter 4

Searches for SUSY at the LHC

Generic susy searches. What we look for etc

4.1 The α_T search

Stuff about the α_T variable

4.2 Searches for Natural SUSY with B-tag templates.

Btag Templates blah blah

Chapter 5

Results

Results at 12fb 8TeV

5.1 Statistical Interpretation

Likelihood stuff

5.2 Interpretation in Simplified Signal Models

Result interpretation

Bibliography

[1] LHCb, S. Amato *et al.*, CERN-LHCC-98-4.

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