Particle Flow Calorimetry

An overview of works on CALICE collaboration

Mainly on the Analogue Hadronic Calorimeter

Only for personal learning

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Time: 2017.12.12

(Titel der Masterarbeit - deutsch):

(Abstract in Deutsch, max. 200 Worte. Beispiel: lorem ipsum)

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1 Introduction

this chapter will give a brief introduction to the particle physics, the international linear collider(ILC), the international large detector(ILD), as well as the analogue hadronic calorimeter(AHCAL).

- 1.1 Particle physics
- 1.2 The ILC and ILD
- 1.3 Analogue hadronic calorimeter

2 Calorimeter

- 2.1 Electromagnetic shower
- 2.2 Hadronic shower
- 2.3 Homogeneous calorimeter
- 2.4 Sampling calorimeter

3 Particle Flow Detectors and calorimeter systems

- 3.1 The ILD and SiD calorimeter systems
- 3.2 Electromagnetic calorimeter
- 3.2.1 SiW ECAL
- 3.2.2 SciW ECAL
- 3.3 Hadronic calorimeter
- 3.3.1 Sci Fe and W AHCAL
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- 4 Particle Flow Algorithm
- 4.1 Jet energy resolution
- 4.2 Track reconstruction algorithm
- 4.3 Software compensation

5 Calorimeter Prototype Performance in Test Beams

- 5.1 Test beams overview
- 5.2 CALICE SiW ECAL
- 5.3 SiD SiW ECAL
- 5.4 Sci W ECAL
- 5.5 Sci Fe and W AHCAL
- 5.6 RPC Fe and W DHCAL
- 5.7 RPC Fe SDHCAL

6 Tests of GEANT4 shower simulation models

- 6.1 Physics lists
- 6.2 Electrons in SiW ECAL
- 6.3 Electrons in SciFe HCAL
- 6.4 Hadrons in SiW HCAL
- 6.5 Hadrons shower shapers in scintillator AHCAL
- 6.6 Charge track segments in hadronic shower
- 6.7 Shower evolution with time

7 Engineer Prototype of AHCAL

- 7.1 Scintillator
- 7.2 Silicon photomultiplier
- 7.3 AHCAL from physics prototype to engineer prototype

8 Calibration of AHCAL

Part I Appendix

A Lists

- A.1 List of Figures
- A.2 List of Tables

B Bibliography

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