February 12, 2007

# Study of the response of the CALICE calorimeter prototypes to electrons

The CALICE Collaboration

**Abstract**

This is a skeleton note, outlining what we should hope to produce for LCWS in DESY May 2006. We would hope that it would then evolve into a publication.

# 1 Introduction

Motivation

# 2 The Calice Prototypes

Brief description of the calorimeters and readout - emphasising geometry etc.

# 3 The Test Beams

Describe test beam layouts at DESY and CERN - beam energies and angles, data samples collected, beam instrumentation, beam dimensions.

# 4 ECAL Calibration

*Marcel/George?* Describe calibration procedure. Results - uniformity of gain and pedestals, noise, stability with time and running conditions, temperature etc.

# 5 Monte Carlo simulation

Outline implementation of prototypes in Mokka; digitization procedure.

# 6 Electron Selection

## 6.1 DESY data

Cuts needed to remove low energy background; double events.

## 6.2 CERN data

Cuts needed to deal with noise. Square events. Cuts to remove $\pi$ and $\mu$ (HCAL activity; Čerenkov...). Cuts on visible energy?

# 7 Performance Studies

## 7.1 Energy Response and Linearity

Behaviour in centre of wafer, uniformity and edge effects. Dependence on angle.

## 7.2 Energy Resolution

Dependence on energy, position, angle.

## 7.3 Longitudinal shower development

and leakage into HCAL

## 7.4 Transverse shower profile

effective Molière radius

## 7.5 Spatial and angular resolution of ECAL

# 8 Summary

# References

Figure 1: *A caption*