



Università degli Studi di Pavia

FACOLTÀ DI SCIENZE MATEMATICHE, FISICHE, NATURALI
Corso di laurea in Scienze Fisiche

**Fotorivelatori Criogenici per la rivelazione di eventi rari
in fisica delle alte energie**

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Introduction

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Capitolo 1

Future $e^+ e^-$ colliders

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1.1 Physics goals

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1.2 Leptonic colliders

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1.3 Detectors

Capitolo 2

Calorimetry and dual-readout

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2.1 Electromagnetic showers

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2.1.1 Shower development

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2.1.2 Energy resolution

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2.2 Hadronic showers

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2.2.1 Shower development

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2.3 Dual-readout calorimetry

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2.3.1 Working principles

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2.3.2 Experiments

Capitolo 3

Silicon Photomultipliers

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3.1 Working principles

aaa

3.2 SiPM Response

aaa

3.3 Noise effects

aaa

3.3.1 Dark Count Rate

aaa

3.3.2 After-Pulse

aaa

3.3.3 Optical Cross-Talk

Capitolo 4

IDEA DR calorimeter project

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Capitolo 5

IDEA DR calorimeter full simulation

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5.1 Occupancy effect and Energy loss

Studies of the occupancy effect are important preliminary studies that give knowledge about the information loss in the detection process.

Capitolo 6

Conclusion

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Thanks

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Bibliografia

- [1] Y. Fukuda et al., Phys. Rev. Lett. 81 (1998) 1158-1162.