ETH Zürich

Doctoral Thesis

Same-sign dileptons as a search tool at CMS

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for the degree of Doctor of Science

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D-PHYS

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Declaration of Authorship

I, Marc Dünser, declare that this thesis titled, 'Same-sign dileptons as a search tool at CMS' and the work presented in it are my own. I confirm that:

- This work was done wholly or mainly while in candidature for a research degree at this University.
- Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated.
- Where I have consulted the published work of others, this is always clearly attributed.
- Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work.
- I have acknowledged all main sources of help.
- Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself.

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"Thanks to my solid academic training, today I can write hundreds of words on virtually any topic without possessing a shred of information, which is how I got a good job in journalism."

Dave Barry

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Abstract

Faculty Name
D-PHYS

Doctor of Science

Same-sign dileptons as a search tool at CMS

by Marc Dünser

The Thesis Abstract is written here (and usually kept to just this page). The page is kept centered vertically so can expand into the blank space above the title too...

Acknowledgements

The acknowledgements and the people to thank go here, don't forget to include your project advisor...

For/Dedicated to/To my...

Contents

Chapter 1

Introduction

The construction of the LHC and its experiments over the few last decades has been only the last step in a long and successful history of particle accelerators that started roughly 100 years ago. Just as the first specimens of its kind, the LHC serves – first and foremost – the purpose of fundamental research.

Chapter 2 describes the fundamentals of particle physics from a theoretical standpoint, Chapter XXXX

Chapter 2

Theory

Appendix A

Dummy Appendix

You can defer lengthy calculations that would otherwise only interrupt the flow of your thesis to an appendix.

List of Figures

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Abbreviations

LAH **L**ist **A**bbreviations **H**ere

Physical Constants

$$\text{Speed of Light} \quad c \quad = \quad 2.997\ 924\ 58 \times 10^{8}\ \text{ms}^{-\text{S}}\ \text{(exact)}$$

Symbols

a	distance	m
P	power	W (Js^{-1})
ω	angular frequency	rads^{-1}