

# Contents

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<b>1</b>	<b>Introduction</b>	<b>1</b>
<b>2</b>	<b>The Standard Model of Partical Physics</b>	<b>3</b>
2.1	Fundamental Particals, Fields and Forces . . . . .	3
2.2	QCD . . . . .	5
2.3	Elektroweak inteaction theory and Higgs Mechanism . . . . .	6
	<b>Bibliography</b>	<b>7</b>
<b>A</b>	<b>Useful information</b>	<b>9</b>
	<b>List of Figures</b>	<b>11</b>
	<b>List of Tables</b>	<b>13</b>



## Introduction

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The introduction usually gives a few pages of introduction to the whole subject, maybe even starting with the Greeks.

For more information on  $\LaTeX$  and the packages that are available see for example the books of Kopka [**kopka04**] and Goossens et al [**goossens04**].

A lot of useful information on particle physics can be found in the “Particle Data Book” [**pdg2010**].

I have resisted the temptation to put a lot of definitions into the file `thesis_defs.sty`, as everyone has their own taste as to what scheme they want to use for names. However, a few examples are included to help you get started:

- cross-sections are measured in pb and integrated luminosity in  $\text{pb}^{-1}$ ;
- the  $K_S^0$  is an interesting particle;
- the missing transverse momentum,  $p_T^{\text{miss}}$ , is often called missing transverse energy, even though it is calculated using a vector sum.

Note that the examples of units assume that you are using the `siunitx` package.

It also is probably a good idea to include a few well formatted references in the thesis skeleton. More detailed suggestions on what citation types to use can be found in the thesis guide [**thesis-guide**]:

- articles in refereed journals [**pdg2010**, **Aad:2010ey**];
- a book [**Halzen:1984mc**];
- a PhD thesis [**tlodd:2012**] and a Diplom thesis [**mergelmeyer:2011**];
- a collection of articles [**lhcb:vol1**];
- a conference note [**ATLAS-CONF-2011-008**];
- a preprint [**atlas:perf:2009**] (you can also use `@online` or `@booklet` for such things);
- something that is only available online [**thesis-guide**].

At the end of the introduction it is normal to say briefly what comes in the following chapters.

The lines at the end of this file are used by AUCTeX to specify which is the master  $\LaTeX$  file, so that you can compile your thesis directly within `emacs`.

At the end of the introduction it is normal to say briefly what comes in the following chapters.

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# The Standard Model of Partical Physics

bla bla

## 2.1 Fundamental Particals, Fields and Forces

The Standard Model of Particle Physics [1–7], is a re-normalizable and relativistic Quantum Field Theory (QFT) of the fundamental fermions (spin  $s = 1/2$ ) and their interactions mediated by gauge bosons (spin  $s = 1$ ). Its basic structure is

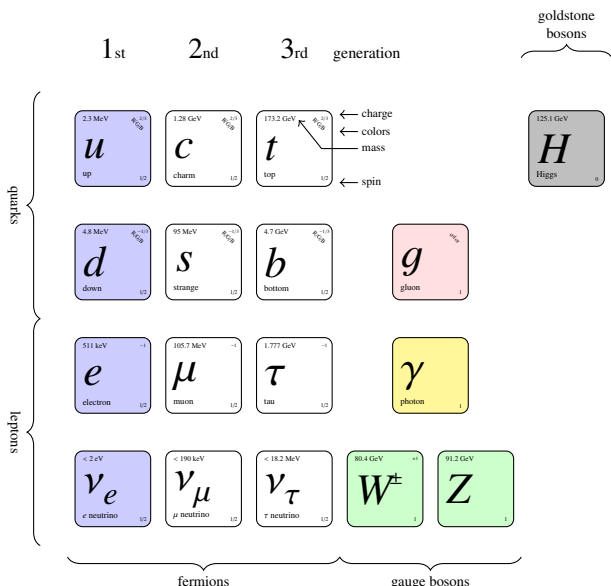


Figure 2.1: Graphical



Figure 2.2



Figure 2.3

## 2.2 QCD



Figure 2.4

## 2.3 Elektroweak inteaction theory and Higgs Mechanism



# Bibliography

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- [1] S. L. Glashow, *Partial-symmetries of weak interactions*, Nuclear Physics **22** (1961) 579 (cit. on p. 3).
- [2] S. L. Glashow, J. Iliopoulos and L. Maiani, *Weak interactions with lepton-hadron symmetry*, Physical Review D **2** (1970) 1285 (cit. on p. 3).
- [3] D. J. Gross and F. Wilczek, *Asymptotically free gauge theories. I*, Physical Review D **8** (1973) 3633 (cit. on p. 3).
- [4] H. D. Politzer, *Reliable perturbative results for strong interactions?*, Physical Review Letters **30** (1973) 1346 (cit. on p. 3).
- [5] H. D. Politzer, *Asymptotic freedom: An approach to strong interactions*, Physics Reports **14** (1974) 129 (cit. on p. 3).
- [6] A. Salam and J. C. Ward, *Electromagnetic and weak interactions*, Physics Letters **13** (1964) 168 (cit. on p. 3).
- [7] S. Weinberg, *A model of leptons*, Physical review letters **19** (1967) 1264 (cit. on p. 3).



## APPENDIX **A**

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### Useful information

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In the appendix you usually include extra information that should be documented in your thesis, but not interrupt the flow.



## List of Figures

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2.1	Graphical	3
2.2		4
2.3		5
2.4		6



## List of Tables

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# Acknowledgements

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I would like to thank ...

You should probably use `\chapter*` for acknowledgements at the beginning of a thesis and `\chapter` for the end.