

# F91: Studying the $Z$ boson with the ATLAS Detector at the LHC

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(Carried out in the week of March 4<sup>th</sup>, 2019)

This experiment has been performed as part of the advanced lab course for physics students (FP) at Heidelberg University.

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## I. INTRODUCTION

Hier schon einmal ein paar wichtige Formeln:

$$\mathcal{L} = \frac{N_1 N_2 f_{\text{rev}} n_b}{4\pi \sigma_x \sigma_y} \quad (1)$$

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$$\mathcal{L}_{\text{int}} = \int \mathcal{L} dt \quad (2)$$

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$$N = \sigma_{pp \rightarrow X} \cdot \mathcal{L}_{\text{int}} \quad (3)$$

## II. THEORY

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### A. This is a subsection

#### 1. This is a subsubsection

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## III. EXPERIMENT

### A. Experimental Setup

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#### IV. RESULTS

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| Test | $x_1$ [AU] | $x_2$ [AU] | $x_3$ [AU] | Quantity |
|------|------------|------------|------------|----------|
| A    | 2,2        | 3,8        | 6,2        | Q1       |
| B    | 2,3        | 7,0        | -          | Q2       |
| C    | 2,1        | 11,6       | -          | Q3       |
| D    | 3,9        | 6,3        | -          | Q4       |
| E    | 2,2        | 7,0        | -          | Q5       |

**Table I:** This is an example table.

#### V. DISCUSSION

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This is the second paragraph. Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information?

Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

And after the second paragraph follows the third paragraph. Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

After this fourth paragraph, we start a new paragraph sequence. Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

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#### ACKNOWLEDGMENTS

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[1] M. Wessels et al. *Studying the Z boson with the ATLAS Detector at the LHC - Manual V0.5*. Heidelberg University, 2018.