My Thesis Title

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CONTENTS

1. THE LARGE HADRON COLLIDER

1.1 scratch section to work out outline...

First thing to do is introduce the LHC as the large hadron collider and mention where it is located. Now I should give a brief overview of what it does. Now I need to talk about how it does this. That means I need to mention how the protons are accelerated. Then I need to explain how we contain and collide them once they are accelerated. This leads into talking about the tunnel and magnets used for steering the bunches.

1.2 Introduction

The Large Hadron Collider (LHC) is a 26.7 kilometer-long two-ring particle accelerator and collider located on the border of France and Switzerland at the European Organization for Nuclear Research (CERN). During normal operations the LHC maintains two counter-rotating beams of proton bunches that collide at four interaction points (IP). The ALICE (Point 2), ATLAS (Point 1), CMS (Point 5), and LHC-b experiments each have a detector at one of these interaction points as scene in Figure 1.1 . The CMS and ATLAS are general-purpose detectors while LHC-b specializes in beauty quark studies. ALICE is a heavy-ion experiment which uses $^{208}Pb - p$ or $^{208}Pb -^{208} Pb$ collisions that can also be produced by the LHC.

1.3 Injector Chain

1.4 Tunnel and Magnets

1.5 Luminosity

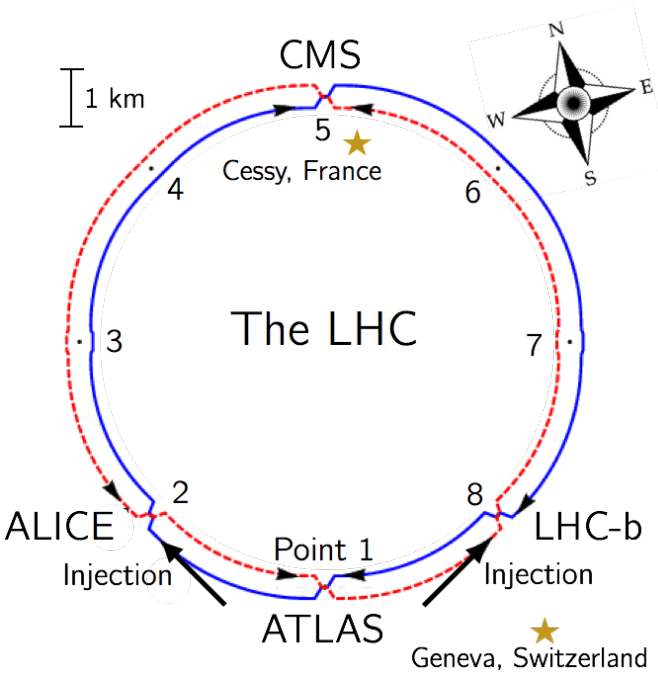

Fig. 1.1: Interaction points of the LHC

2. CMS DETECTOR

3. THE STANDARD MODEL

4. SUPERSYMMETRY

BIBLIOGRAPHY

[Guy(2016)] S. Guy, Journal of stuff (2016).