# Studies of the Higgs boson with the ATLAS experiment at the LHC: Observation, measurement, and searches for new physics


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## Abstract

We measured things. And searched for other things. Here is what we found, please let me graduate.

# Contents

# Listing of figures

This is the dedication.

# Acknowledgments

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# Introduction

# Part I

# Preliminaries

# 1

# The Standard Model and beyond: a theoretical overview

*This is some random quote to start off the chapter.*

Firstname lastname

# 2

# The ATLAS detector and the Large Hadron Collider

2.1 The Large Hadron Collider

2.2 The ATLAS Detector

# Part II

# Observation and measurement of Higgs boson decays to $WW*$ with the ATLAS detector in LHC Run 1 at $\sqrt{s} = 7$ and 8 TeV

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# $H \to WW^* \to \ell\nu\ell\nu$ Analysis Strategy

# 4

# Measurement of gluon fusion production of $H \to WW^* \to \ell\nu\ell\nu$

# 5

# Observation of Vector Boson Fusion production of $H \to WW^* \to \ell\nu\ell\nu$

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# Combined Run 1

# $H \to WW^* \to \ell\nu\ell\nu$results

# Part III

# Search for Higgs pair production in the $HH \to b\bar{b}b\bar{b}$ channel in LHC Run 2 at $\sqrt{s}$ = 13 TeV

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# Search overview

# 8

# Search for Higgs pair production in boosted final states

# 9

# Search for Higgs pair production in resolved final states

# 10

# Combined results with Run 2 2015 dataset

# Part IV

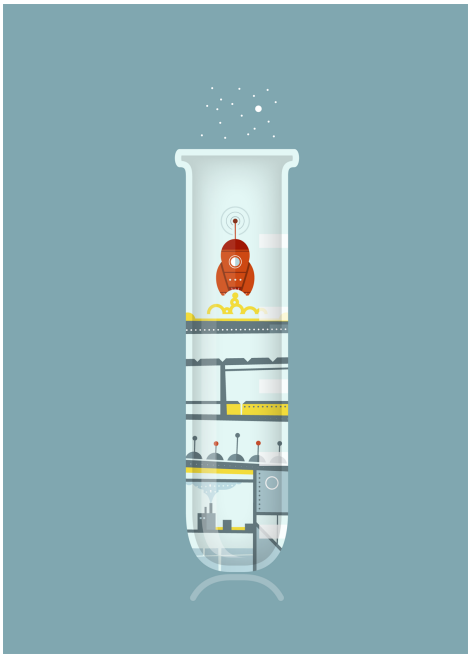
# Looking ahead

# 11

# Conclusion

We found the Higgs. Then measured it. Then used it to look for new physics. What a time to be alive!

# References



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