SEARCH FOR $t\bar{t}Z'\to t\bar{t}t\bar{t}$ PRODUCTION IN THE MULTILEPTON FINAL STATE IN pp COLLISIONS AT $\sqrt{s}=13$ AND 13.6 TEV WITH THE ATLAS DETECTOR

By

Hieu Le

A DISSERTATION

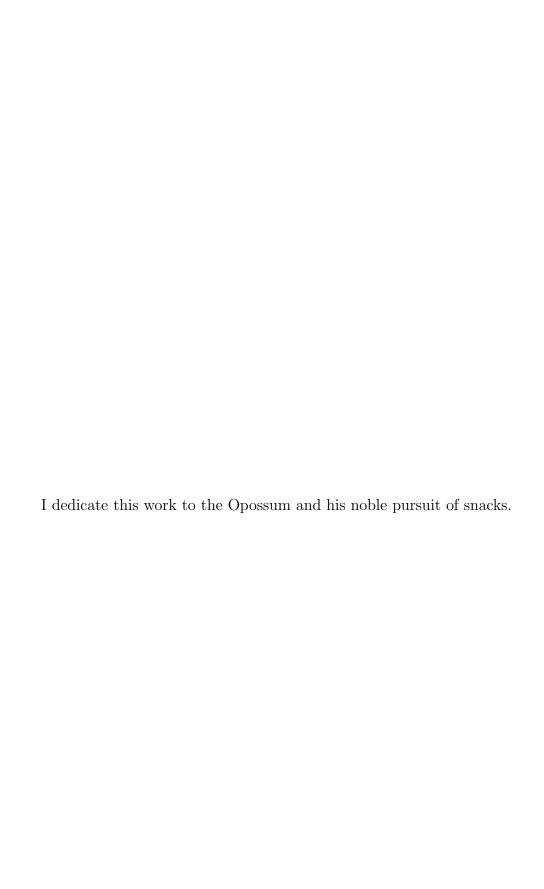
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2024

ABSTRACT

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ACKNOWLEDGMENTS

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PREFACE

This is my preface. remarks remarks remarks

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- 1.2 Analysis strategy
- 1.2.1 Profile likelihood fit
- 1.2.2 Analysis regions

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[observation paper results]

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[History of accelerators, leading into LHC + aim of LHC]

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[Basic info: location, size, main working mechanism, main detectors, main physics done]

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[pp collision, pdf, cross section, luminosity]

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[History, goals, coordinate system]

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[trigger selection] [other cuts made] [luminosity]

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[geant4, madgraph, pdf set, etc.]

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b-tagging

[details about optimization work & b-tagging calibration work]

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[event selection criteria]

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[lepton pt cut study here]

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 $t\bar{t}W$ CRs

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 $[{\rm include\ blinding\ strategy}]$

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SM MVA

BSM MVA

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APPENDIX A. Statistical analysis

- A.1 Statistical inference
- A.2 Hypothesis testing
- **A.3** χ^2 template fitting