

UNIVERSITY OF CALIFORNIA  
Los Angeles

Integration and Goal-Guided Scheduling of Bottom-Up and Top-Down Computing  
Processes in Hierarchical Models

A dissertation submitted in partial satisfaction  
of the requirements for the degree  
Doctor of Philosophy in Physics

by

Your Official Name

2017

© Copyright by  
Your Official Name  
2017

# ABSTRACT OF THE DISSERTATION

Integration and Goal-Guided Scheduling of Bottom-Up and Top-Down Computing  
Processes in Hierarchical Models

by

Your Official Name

Doctor of Philosophy in Physics

University of California, Los Angeles, 2017

Professor Chair's name 1, Chair

Ne quo feugiat tractatos temporibus, eam te malorum sensibus. Impetus voluptua senserit id mel, lucilius adipiscing at duo. Suas noster sanctus cu pro, movet dicam intellegebat pri ad, esse utamur vulputate ut per. Admodum facilisi sea an, omittam molestiae pertinacia vim eu, et eam illud graeco. Enim persius duo ei, mea te posse congue putent.

Has ut commodo inermis definiebas. Eu pro audire fabellas. Te qui zril omnes forensibus, ius an dico tempor maiorum. Ea mel illud adipisci.

Ad vel dicant aliquip, ut eam agam constituto, no quo erant melius. Porro labores invidunt ad vel, quaeque epicurei vituperatoribus ex cum. Qui tamquam omnesque ex, essent percipitur intellegam an per. Iusto expetenda sed et.

The dissertation of Your Official Name is approved.

Committee Member 1 Name

Committee Member 2 Name

Committee Member 3 Name

Chair's name 1, Committee Chair

University of California, Los Angeles

2017

*To my mother . . .  
who—among so many other things—  
saw to it that I learned to touch-type  
while I was still in elementary school*

## TABLE OF CONTENTS

List of Figures . . . . .	vi
Preface . . . . .	vii
Curriculum Vitae . . . . .	viii
1 Introduction . . . . .	1
Bibliography . . . . .	4

## LIST OF FIGURES

## PREFACE

(Acknowledgments omitted for brevity.)



## CURRICULUM VITAE

2006 – 2010	B.S. in Physics, National Tsing Hua University (NTHU), Hsinchu, Taiwan.
2011 – Present	Ph.D. student in Physics, University of California, Los Angeles (UCLA).
2016	Dissertation Year Fellowship, Graduate Division, UCLA.

## PUBLICATIONS

- [1] Alexander Kusenko, Masahiro Kawasaki, Lauren Pearce, and Louis Yang, “Relaxation leptogenesis, isocurvature perturbations, and the cosmic infrared background,” (2017), [arXiv:1701.02175 \[hep-ph\]](#) .
- [2] Alexander Kusenko, Lauren Pearce, and Louis Yang, “Leptogenesis via the 750 GeV pseudoscalar,” *Phys. Rev.* **D93**, 115005 (2016), [arXiv:1604.02382 \[hep-ph\]](#) .
- [3] Helene Gertov, Francesco Sannino, Lauren Pearce, and Louis Yang, “Baryogenesis via Elementary Goldstone Higgs Relaxation,” *Phys. Rev.* **D93**, 115042 (2016), [arXiv:1601.07753 \[hep-ph\]](#) .

# CHAPTER 1

## Introduction

For text, let's use the first words out of the ispell dictionary [1].

aback abaft abandon abandoned abandoning abandonment abandons abase abased abase-  
ment abasements abases abash abashed abashes abashing abasing abate abated abate-  
ment abatements abater abates abating abbe abbey abbey's abbeys abbot abbot's abbots abbrev-  
iate abbreviated abbreviates abbreviating abbreviation abbreviations abdomen abdomen's  
abdomens abdominal abduct abducted abduction abduction's abductions abductor abduc-  
tor's abductors abducts abed aberrant aberration aberrations abet abets abetted abetter  
abetting abeyance abhor abhorred abhorrent abhorrer abhorring abhors abide abided abides  
abiding abilities ability ability's abject abjection abjections abjectly abjectness abjure ab-  
jured abjures abjuring ablate ablated ablates ablating ablation ablative ablaze able abler  
ablest ablute ably abnormal abnormalities abnormality abnormally aboard abode abode's  
abodes abolish abolished abolisher abolishers abolishes abolishing abolishment abolishment's  
abolishments abolition abolitionist abolitionists abominable aboriginal aborigine aborigine's  
aborigines abort aborted aborting abortion abortion's abortions abortive abortively aborts  
abound abounded abounding abounds about above aboveground abrade abraded abrades  
abrading abrasion abrasion's abrasions abreaction abreactions abreast abridge abridged abridges  
abridging abridgment abroad abrogate abrogated abrogates abrogating abrupt abruptly  
abruptness aback abaft abandon abandoned abandoning abandonment abandons abase abased  
abacement abasements abases abash abashed abashes abashing abasing abate abated abate-  
ment abatements abater abates abating abbe abbey abbey's abbeys abbot abbot's abbots  
abbreviate abbreviated abbreviates abbreviating abbreviation abbreviations abdomen ab-  
domen's abdomens abdominal abduct abducted abduction abduction's abductions abduc-

tor abductor's abductors abducts abed aberrant aberration aberrations abet abets abetted  
 abetter abetting abeyance abhor abhorred abhorrent abhorrer abhorring abhors abide abided  
 abides abiding abilities ability ability's abject abjection abjections abjectly abjectness abjure  
 abjured abjures abjuring ablate ablated ablates ablating ablation ablative ablaze able abler  
 ablest ablute ably abnormal abnormalities abnormality abnormally aboard abode abode's  
 abodes abolish abolished abolisher abolishers abolishes abolishing abolishment abolishment's  
 abolishments abolition abolitionist abolitionists abominable aboriginal aborigine aborigine's  
 aborigines abort aborted aborting abortion abortion's abortions abortive abortively aborts  
 abound abounded abounding abounds about above aboveground abrade abraded abrades  
 abrading abrasion abrasion's abrasions abreaction abreactions abreast abridge abridged abridges  
 abridging abridgment abroad abrogate abrogated abrogates abrogating abrupt abruptly  
 abruptness aback abaft abandon abandoned abandoning abandonment abandons abase abased  
 abasement abasements abases abash abashed abashes abashing abasing abate abated abate-  
 ment abatements abater abates abating abbe abbey abbey's abbeys abbot abbot's abbots  
 abbreviate abbreviated abbreviates abbreviating abbreviation abbreviations abdomen ab-  
 domen's abdomens abdominal abduct abducted abduction abduction's abductions abduc-  
 tor abductor's abductors abducts abed aberrant aberration aberrations abet abets abetted  
 abetter abetting abeyance abhor abhorred abhorrent abhorrer abhorring abhors abide abided  
 abides abiding abilities ability ability's abject abjection abjections abjectly abjectness abjure  
 abjured abjures abjuring ablate ablated ablates ablating ablation ablative ablaze able abler  
 ablest ablute ably abnormal abnormalities abnormality abnormally aboard abode abode's  
 abodes abolish abolished abolisher abolishers abolishes abolishing abolishment abolishment's  
 abolishments abolition abolitionist abolitionists abominable aboriginal aborigine aborigine's  
 aborigines abort aborted aborting abortion abortion's abortions abortive abortively aborts  
 abound abounded abounding abounds about above aboveground abrade abraded abrades  
 abrading abrasion abrasion's abrasions abreaction abreactions abreast abridge abridged abridges  
 abridging abridgment abroad abrogate abrogated abrogates abrogating abrupt abruptly  
 abruptness aback abaft abandon abandoned abandoning abandonment abandons abase abased  
 abasement abasements abases abash abashed abashes abashing abasing abate abated abate-

ment abatements abater abates abating abbe abbey abbey's abbeys abbot abbot's abbots  
abbreviate abbreviated abbreviates abbreviating abbreviation abbreviations abdomen ab-  
domen's abdomens abdominal abduct abducted abduction abduction's abductions abduc-  
tor abductor's abductors abducts abed aberrant aberration aberrations abet abets abetted  
abetter abetting abeyance abhor abhorred abhorrent abhorrer abhorring abhors abide abided  
abides abiding abilities ability ability's abject abjection abjections abjectly abjectness abjure  
abjured abjures abjuring ablate ablated ablates ablating ablation ablative ablaze able abler  
ablest ablute ably abnormal abnormalities abnormality abnormally aboard abode abode's  
abodes abolish abolished abolisher abolishers abolishes abolishing abolishment abolishment's  
abolishments abolition abolitionist abolitionists abominable aboriginal aborigine aborigine's  
aborigines abort aborted aborting abortion abortion's abortions abortive abortively aborts  
abound abounded abounding abounds about above aboveground abrade abraded abrades  
abrading abrasion abrasion's abrasions abreaction abreactions abreast abridge abridged abridges  
abridging abridgment abroad abrogate abrogated abrogates abrogating abrupt abruptly  
abruptness

## BIBLIOGRAPHY

- [1] P.A.R. Ade et al. Planck 2013 results. XXII. Constraints on inflation. *Astron. Astrophys.*, 571:A22, 2014.