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

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

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 $({\bf Acknowledgments\ omitted\ for\ brevity.})$

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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.

aback abaft abandon abandoned abandoning abandonment abandons abase abased abasement abasements abases abash abashed abashes abashing abasing abate abated abatement abatements abater abates abating abbe abbey abbey's abbeys abbot abbot's abbots abbreviate abbreviated abbreviates abbreviating abbreviation abbreviations abdomen abdomen's abdomens abdominal abduct abducted abduction abduction's abductions abductor 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 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 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