

ANDREW J. LONG
CURRICULUM VITAE

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EMPLOYMENT & EDUCATION

- 2019 - *Assistant Professor*
Rice University; Houston, TX
- 2018 - 2019 *Leinweber Fellow*
Leinweber Institute for Theoretical Physics
Ann Arbor, MI
- 2015 - 2018 *KICP Postdoctoral Fellow*
Kavli Institute for Cosmological Physics; Chicago, IL
Supervisor: Lian-Tao Wang
- 2012 - 2015 *Postdoctoral Research Associate*
Arizona State University; Tempe, AZ
Supervisor: Lawrence M. Krauss
- 2006 - 2012 *Doctor of Philosophy, Physics*
University of Wisconsin; Madison, WI
Thesis Advisor: Daniel J. H. Chung
- 2002 - 2006 *Bachelor of Arts, Physics*
Cornell University; Ithaca, NY
Research Advisor: David L. Rubin

SELECTED PUBLICATIONS (for complete record see InSpire)

1. “Dark Quark Nuggets,”
Yang Bai, Andrew J. Long, and Sida Lu
submitted to journal for publication, [hep-ph/1810.04360].
2. “Cosmological Aspects of the Clockwork Axion,”
Andrew J. Long
JHEP 1807 (2018) 066, [hep-ph/1803.07086].
3. “Neutrino Mass Priors for Cosmology from Random Matrices,”
Andrew J. Long, Marco Raveri, Wayne Hu, and Scott Dodelson
Phys.Rev. D**97** (2018) no.4, 043510, [astro-ph/1711.08434].
4. “Superheavy dark matter through Higgs portal operators,”
Rocky Kolb and Andrew J. Long
Phys.Rev. D**96** (2017) no.10, 103540, [astro-ph/1708.04293].
5. “Evolution of the Baryon Asymmetry through the Electroweak Crossover in the Presence of a Helical Magnetic Field,”
Kohei Kamada and Andrew J. Long
Phys.Rev. D**94** (2016) no.12, 123509, [hep-ph/1610.03074].
6. “Probing the Electroweak Phase Transition with Higgs Factories and Gravitational Waves,”
Peisi Huang, Andrew J. Long, and Lian-Tao Wang
Phys.Rev. D**94** (2016) no.7, 075008, [hep-ph/1608.06619].
7. “Morphology of blazar-induced gamma ray halos due to a helical intergalactic magnetic field,”
Andrew J. Long and Tanmay Vachaspati
JCAP 1509 (2015) no.09, 065, [hep-ph/1505.07846].
8. “Cosmic Strings in Hidden Sectors: 2. Cosmological and Astrophysical Signatures,”
Andrew J. Long and Tanmay Vachaspati
JCAP 1412 (2014) no.12, 040, [hep-ph/1409.6979].
9. “Detecting Non-Relativistic Cosmic Neutrinos by Capture on Tritium: Phenomenology and Physics Potential,”
Andrew J. Long, Cecilia Lunardini, and Eray Sabancilar
JCAP 1408 (2014) 038, [hep-ph/1405.7654].
10. “The 125 GeV Higgs and Electroweak Phase Transition Model Classes,”
Daniel J. H. Chung, Andrew J. Long, and Lian-Tao Wang
Phys.Rev. D**87**:023509 (2013), [hep-ph/1209.1819].

PROFESSIONAL SERVICE, EDUCATION, & OUTREACH

1. Co-convener of the BSM session of the “CEPC 2018” workshop in Beijing, China.
<https://indico.ihep.ac.cn/event/7389/overview>
November 2018.
2. Public lecture with the “Art of Science” series.
“Dark Matter Demystified”
Agitator Gallery; Chicago, IL. July 2018.
3. “Life Long Learning”
Co-organizer of an outreach program for older adults in Chicago.
We coordinate speakers from the university to visit libraries and senior centers to give public lectures on contemporary topics in physics and astronomy.
Spring 2016 - Summer 2018.
4. Co-organizer of “Towards Dark Matter Discovery” workshop at the University of Chicago.
<http://kicp-workshops.uchicago.edu/2018-dm/index.php>
April 2018.
5. Interviewed for article in Symmetry Magazine, “How to Build a Universe”
<http://www.symmetrymagazine.org/article/how-to-build-a-universe>,
February 2017.
6. Co-organizer of “Theoretical Advances in Particle Cosmology” workshop at the University of Chicago.
https://kicp-workshops.uchicago.edu/ParticleCosmo_2016
October 2016.
7. “New Physics” panel discussion of LHC, Higgs boson, dark matter, cosmology,
Phoenix Comic-Con,
May 2015
8. Co-organizer of “Is Our Universe Necessary” workshop at ASU.
https://origins.asu.edu/sites/default/files/origins_project_newsletter_2014_.pdf
February 2014.
9. “Origins Project Interdisciplinary Meeting (OPTIM),”
Regular interdisciplinary, informal discussion group.
Arizona State University; Tempe, AZ
Fall 2013 - Spring 2015.

INVITED SEMINARS

1. "Black Holes, and Nuggets, and Blobs. Oh my!"
Talk given at Cornell University,
LEPP Theory Seminar, October 26, 2018.
2. "Black Holes, and Nuggets, and Blobs. Oh my!"
Talk given at University of Syracuse,
HET, Relativity, & Cosmology Seminar, October 22, 2018.
3. "Black Holes, and Nuggets, and Blobs. Oh my!"
Talk given at University of Michigan,
High Energy Theory Seminar, September 28, 2018.
4. "Six Flavor Quark Matter."
Talk given at Fermi National Accelerator Laboratory,
Particle Astrophysics Seminar, April 9, 2018.
5. "Baryogenesis from Axions and Anomalies."
Talk given at Tufts University,
Cosmology Seminar, March 29, 2018.
6. "Leptogenesis from a First-Order Lepton-Number Breaking Phase Transition."
Talk given at University of Massachusetts,
AFCI Seminar, March 27, 2018.
7. "Testing Baryons from Bubbles with Colliders and Cosmology."
Talk given at University of Cincinnati,
Particle-Astrophysics Seminar, February 27, 2018.
8. "Why is there something rather than nothing?"
Talk given at Rice University,
Physics and Astronomy Colloquium, February 21, 2018.
9. "Testing Baryons from Bubbles with Colliders and Cosmology."
Talk given at Case Western Reserve University,
Particle Physics Seminar, February 13, 2018.
10. "Testing Baryons from Bubbles with Colliders and Cosmology."
Talk given at Notre Dame University,
Particle Physics Seminar, February 6, 2018.

11. “Why is there something rather than nothing?”
Talk given at Northwestern University,
High Energy Physics Seminar, January 8, 2018.
12. “Topics in Axion Cosmology.”
Talk given at Institute for Physics and Mathematics of the Universe,
APEC Seminar, November 10, 2017.
13. “Topics in Axion Cosmology.”
Talk given at Argonne National Laboratory,
Theory Seminar, October 10, 2017.
14. “Topics in Axion Cosmology.”
Talk given at University of Wisconsin - Madison,
High Energy / Cosmology Theory Seminar, October 3, 2017.
15. “Topics in Axion Cosmology.”
Talk given at University of Michigan - MCTP,
High Energy Theory Brown Bag Seminar, September 27, 2017.
16. “Baryogenesis from Helical Magnetic Fields.”
Talk given at University of Sussex,
Theoretical Particle Physics Seminar, April 3, 2017.
17. “Baryogenesis from Helical Magnetic Fields.”
Talk given at University College London,
Cosmology Seminar, March 29, 2017.
18. “Electroweak Phase Transition Models and Higgs Couplings at the CEPC, From
A Cosmologist’s Perspective.”
Talk given at University of Illinois, Urbana-Champaign,
HEP Seminar, February 3, 2017.
19. “Baryogenesis from Helical Magnetic Fields.”
Talk given at University of Wisconsin - Madison,
HEP / Cosmology Theory Seminar, September 13, 2016.
20. “Relic Neutrino Direct Detection.”
Talk given at University of Chicago,
HEP Brown Bag Seminar, May 9, 2016.
21. “Chiral Charge Erasure via Thermal Fluctuations of Magnetic Helicity.”
Talk given at Arizona State University,
Seminar, March 30, 2016.

22. "Helical Magnetic Fields in the Cosmos."
Talk given at Fermilab,
Astrophysics Seminar, February 8, 2016.
23. "Helical Magnetic Fields in the Cosmos."
Talk given at University of Chicago - KICP,
Seminar, January 15, 2016.
24. "Helical Magnetic Fields in the Cosmos."
Talk given at University of Illinois, Urbana-Champaign,
High Energy Phenomenology Seminar, December 4, 2015.
25. "Probing the Relic Neutrino Background: Physics Potential of Direct Detection."
Talk given at Argonne National Laboratory,
Seminar, October 13, 2015.
26. "Particle Production from Cosmic Strings."
Talk given at KICP,
Open Group Seminar, April 28, 2015.
27. "Probing the Relic Neutrino Background: Physics Potential of Direct Detection."
Talk given at Washington University,
Theory Seminar, April 23, 2015.
28. "Probing the Relic Neutrino Background: Physics Potential of Direct Detection."
Talk given at Lawrence Berkeley National Laboratory,
Particle Theory Seminar, February 18, 2015.
29. "Particle Production from Cosmic Strings."
Talk given at Tufts University,
Joint MIT / Tufts Cosmology Seminar, February 3, 2015.
30. "Particle Production from Cosmic Strings."
Talk given at University of Pennsylvania,
High Energy Theory Special Seminar, November 11, 2014.
31. "Light from Dark Strings."
Talk given at University of Wisconsin – Madison,
Theory Seminar (High Energy / Cosmology), April 11, 2014.
32. "Light from Dark Strings and r from Light Higgs."
Talk given at University of Minnesota – Duluth,
Cosmology Group Meeting, April 9, 2014.

33. “Electroweak Baryogenesis in the LHC Era.”
Talk given at Arizona State University,
Cosmology, Particle, and Astrophysics Seminar, May 24, 2012.
34. “Electroweak Baryogenesis in the LHC Era.”
Talk given at Iowa State University,
HEP Seminar, April 12, 2012.
35. “Dark Matter and Baryogenesis at the Electroweak Phase Transition.”
Talk given at Argonne National Laboratory,
HEP Theory Seminar Series, December 20, 2011.

CONFERENCE TALKS

1. “Testing Baryogenesis/Leptogenesis at Present & Future Colliders.”
given at IPA 2018,
University of Cincinnati. October 10, 2018.
2. “Dark Quark Nuggets.”
given at 6th PIKIO Meeting,
Notre Dame University. October 6, 2018.
3. “Six Flavor Quark Matter.”
given at “Probing Baryogenesis via LHC and Gravitational Wave Signatures”
workshop,
MITP. June 17, 2018.
4. “Cosmology of the Clockwork Axion.”
given at 5th PIKIO Meeting,
University of Illinois, Urbana-Champaign. March 17, 2018.
5. “Testing the Electroweak Phase Transition with Higgs Couplings at the FCC.”
given at 2nd FCC Physics Workshop,
CERN, January 18, 2018.
6. “Electroweak Phase Transition.”
Talk given at Workshop on CEPC Physics.
IHEP, Beijing, China. November 7, 2017.
7. “Baryogenesis from Helical Magnetic Fields.”
Parallel talk given at Cosmo 2017.
Paris Diderot University. Paris, France. August 29, 2017.

8. "Blazar Halo Morphology as a Probe of Helical Intergalactic Magnetic Fields."
Parallel talk given at TeVPA 2017.
The Ohio State University. Columbus, OH. August 10, 2017.
9. "Leptogenesis from a First-Order Lepton- Number Breaking Phase Transition."
Parallel talk given at TeVPA 2017.
The Ohio State University. Columbus, OH. August 10, 2017.
10. "Baryogenesis from Helical Magnetic Fields."
Parallel talk given at PASCOS 2017.
Instituto de Física Teórica. Madrid, Spain. June 22, 2017.
11. "A Cosmologists's Perspective on Higgs Factories."
Parallel talk given at BLV 2017.
Case Western Reserve University. Cleveland, OH. May 16, 2017.
12. "Baryogenesis from Helical Magnetic Fields."
Parallel talk given at BLV 2017.
Case Western Reserve University. Cleveland, OH. May 15, 2017.
13. "A Cosmologist's Perspective on Higgs Factories."
Parallel talk given at Phenomenology 2017 Symposium.
University of Pittsburgh. Pittsburgh, PA. May 9, 2017.
14. "Baryogenesis from Helical Magnetic Fields Through the Electroweak Phase Transition."
Talk given at Electroweak Phase Transition Workshop.
ACFI. University of Massachusetts. Amherst, MA. April 7, 2017.
15. "Exploding! Lepton! Bubbles!."
Talk given at Current Trends in Particle Theory Workshop.
University of Illinois. Chicago, IL. March 4, 2017.
16. "Electroweak Phase Transition Models and Higgs Couplings at the CEPC, From A Cosmologist's Perspective."
Talk given at Workshop on CEPC Physics.
IHEP, Beijing, China. December 14, 2016.
17. "Baryogenesis from Decaying Magnetic Helicity."
Poster presentation given at Cosmo 2016.
University of Michigan. Ann Arbor, MI. August 8, 2016.

18. "The Complementarity of Colliders and Gravitational Waves for Probing the Electroweak Phase Transition."
Parallel talk given at ICHEP.
University of Chicago. Chicago, IL. August 6, 2016.
19. "Probing First Order Electroweak Phase Transition with CEPC – a Cosmologist's Perspective."
Talk given at New Physics Workshop.
KITPC, Beijing, China. July 28, 2016.
20. "Probes of Particle Production from Cosmic Strings."
Talk given at Cosmic Strings Brazil.
IFSC / USP. Sao Carlos, Brazil. February 16, 2016.
21. "keV Relic Neutrino Capture on Tritium."
Talk given at nuDark Workshop.
Technical University of Munich. Garching, Germany. December 9, 2015.
22. "Helical Magnetic Fields from Creation to Detection."
Parallel talk given at Cosmo 2015.
University of Warsaw. Warsaw, Poland. September 11, 2015.
23. "Astrophysical and Cosmological Probes of a Cosmic String Network."
Parallel talk given at Cosmo 2015.
University of Warsaw. Warsaw, Poland. September 9, 2015.
24. "Generating a helical magnetic field from leptogenesis."
Talk given at Nordita Workshop: Cosmological Magnetic Fields.
Nordita. Stockholm, Sweden. June 23, 2015.
25. "Morphology of blazar-induced gamma ray halos."
Parallel talk given at Nordita Workshop: Cosmological Magnetic Fields.
Nordita. Stockholm, Sweden. June 22, 2015.
26. "Detecting Relic Neutrinos: How will we do it and what will we learn?"
Parallel talk given at COSMO 2014.
University of Chicago. Chicago, IL. August 26, 2014.
27. "Constraining Hidden Sectors with Light from Cosmic Strings."
Parallel talk given at Phenomenology 2014 Symposium.
University of Pittsburgh. Pittsburgh, PA. May 5, 2014.

28. "No Light from Light Dark Strings."
Talk given at the ASU / Tufts Cosmic Strings Workshop.
Arizona State University. Tempe, AZ. February 4, 2014.
29. "Testing Electroweak Baryogenesis at the LHC."
Parallel talk given at the Cosmic Frontier Workshop 2013.
SLAC. Menlo Park, CA. March 7, 2013.
30. "Probing Cosmological Fine-Tuning with Phase Transitions."
Parallel talk given at the String Phenomenology Conference 2011.
University of Wisconsin. Madison, WI. August 2011.
31. "Dark Matter Freeze Out at an Electroweak Scale Phase Transition."
Parallel talk given at the Phenomenology 2010 Symposium.
University of Wisconsin. Madison, WI. May 2010.
32. "Electroweak Baryogenesis in the μ -from- ν SSM."
Parallel talk given at the Phenomenology 2009 Symposium.
University of Wisconsin. Madison, WI. May 2009.