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RESEARCH POSITIONS	Associate Professor Physics Department, University of Oregon	09/17 - current
	Visiting Associate Professor on Sabbatical Physics Department, National Taiwan University	08/18 - 07/19
	Assistant Professor Physics Department, University of Oregon <i>was on leave from 09/10 - 08/11</i>	09/10 - 08/17
	Postdoctoral Researcher Physics Department, University of California at Davis	09/08 - 08/11
	Postdoctoral Researcher Physics Department, New York University	09/04 - 08/08
RESEARCH FUNDING	DOE group grant (co-PIs Cohen and Kribs, my portion \$320k)	04/21 - 03/25
	DOE group grant (co-PIs Cohen and Kribs, my portion \$270k)	04/18 - 03/21
	Sabbatical Support from Taiwan Ministry of Science and Technology (travel and stipend)	08/18 - 07/19
	DOE group grant (co-PIs Kribs and Soper, my portion \$200k)	05/14 - 03/18
	DOE individual grant (total \$174k)	05/13 - 03/16
EDUCATION	PhD Harvard University PhD in Theoretical High Energy Physics Advisor: Howard Georgi Thesis Topic: <i>Some Topics in Little Higgs Physics</i>	09/99 - 06/04
	A.M. Harvard University Masters of Arts in Physics	09/99 - 06/01
	B.S. Stanford University B.S. in Physics, Graduated with Distinction	09/95 - 06/99
AWARDS	NSF Graduate Student Fellowship	07/01-06/04
	Harvard University Harold T. White Teaching Award	Spring 2001
	Harvard University Tyndall Graduate Student Scholarship	09/00-06/01

TEACHING

PHYS 414, 415, 417: Quantum Mechanics	AY 20-23
PHYS 610: Particle Phenomenology	Spring 2020
PHYS 414-415: Quantum Mechanics	Fall 2019, Winter 2020
PHYS 631-633: Quantum Mechanics	AY 16-17, 17-18
ASTR 123: Galaxies and the Expanding Universe	Fall 2015, Spring 2016
PHYS 352: Foundation of Physics II	Winter 2014, Winter 2015, Winter 2016
PHYS 610: Early Universe Physics	Fall 2011, Spring 2015
PHYS 610: Math Methods for E&M	Fall 2014
PHYS 610: Beyond the Standard Model Physics	Spring 2012
PHYS 622, 623: Electromagnetic Theory	Winter, Spring 2013
PHYS 634: Advanced Quantum Mechanics	Fall 2013

ADVISING

Committee member for Comprehensive Exam: E. Ptacek (2013), N. Raj (2014), P. Radloff (2014), G. Barello (2014), C. Newby (2015), I. Snyder (2015), M. Amezcua (2015), A. Layne (2015), J. Barkeloo (2017), T. Brunnenmeyer (2018), L. Bradshaw (2020), A. Carroll (2023), T. Mathew (2023).

Committee member for Phd Defense: N. Raj (2015), N. Perlmutter (2015), G. Barello (2016), C. Newby (2016), P. Radloff (2016), D. Kazaras (2017), M. Amezcua (2018), I. Snyder (2018), A. Layne (2018), K. Earle (Carleton University, 2019), J. Barkeloo (2020), T. Brunnenmeyer (2022), L. Bradshaw (2023), Yang Hu (2023), Elliot Granath (2023).

COLLOQUIUM &
CONFERENCE
TALKS IN PAST
FIVE YEARS

- *Amplitudes as observables for Higgs at colliders*: Parallel Talk at LHCP 5/23
- *Primary Amplitudes for Higgs and Top Quark Physics*: Plenary Talk at Recontres de Blois 5/23
- *How to Build a Simple, Interpretable Anomaly Detector for Jet Substructure*: Aspen Center for Physics Blackboard Presentation 9/22
- *Higgs coupling sensitivities to New Physics*: White Paper Presentation at Energy Frontier Workshop 3/22
- *Higgs couplings and High energy amplitudes - Unitarity Bounds*: Co-led Discussion Session at KITP Precision Workshop 5/21
- *H Couplings and the Scale of New Physics*: Moriond Electroweak interactions and Unification meeting 3/21
- *Higgs coupling measurement and model independent bounds on New Physics*: Snowmass Energy Frontier LOI Presentation Meeting 11/20
- *Higgs coupling measurement and model independent bounds on BSM*: 2020 International Workshop on the High Energy Circular Electron Positron Collider 10/20

- *Unitarity Violation of Nonstandard Higgs Couplings*: Snowmass Energy Frontier Meeting on “Triple Higgs Coupling, Quartic, Quintic + more Higgs Friends” on Zoom 6/20
- Invited to give talk at Rencontres de Moriond Electroweak Session, but it was unfortunately cancelled due Italy’s Covid-19 shutdown 3/20
- *Unitarity Violation of Nonstandard Higgs Couplings*: Particle Physics in Computing Frontier Workshop at IBS Center for Theoretical Physics of the Universe at Daejeon, Korea 12/19
- *Theory Overview of DM Searches at the LHC*: Dark Matter LHC Workshop at University of Washington 8/19
- *Unitarity Violation of Nonstandard Higgs Couplings*: 43rd Johns Hopkins Workshop at Kavli IPMU at Kashiwa, Japan 6/19
- *Unitarity Violation of Nonstandard Higgs Couplings*: 13th Particle Physics Phenomenology Workshop at Taipei Normal University 6/19
- *Vector Boson Scattering Probing Unitarity Violation*: National Taiwan University Flavor Workshop 4/19
- *Learning Physics from Machine Learning*: Hong Kong University of Science and Technology Mini-Workshop: Theory - Physics Opportunities and Advanced Tools 1/19
- *Learning Physics from Machine Learning*: National Center for Theoretical Sciences in Hsinchu, Taiwan, Annual Theory Meeting 12/18
- *Learning Physics from Machine Learning*: ASIAA/CCMS/IAMS/LeCosPA/NTU-Physics/NTNU-Physics Joint Colloquium 10/18
- *Exploring Dark Matter From All Directions*: Cosmology Frontier in Particle Physics Workshop at National Taiwan University 9/18
- *Learning Physics from Machine Learning*: Santa Fe Summer Workshop on Particle Physics 7/18
- *Theories and Phenomenology of a Nonstandard Higgs Trilinear*: TRIUMF Theory Workshop on “New Physics and the Higgs” 2/18

INVITED
SEMINARS IN
PAST FIVE
YEARS

- Simpler Anomaly Detectors for Jet Substructure
India Institute of Science 3/23
Korea Institute for Advanced Studies 6/22
- Higgs Coupling Measurements and the Scale of New Physics
University of Maryland 4/21
Oklahoma State University 2/21

- The Higgs Trilinear Coupling and the Scale of New Physics
 Hong Kong University of Science and Technology Institute for Advanced Study 5/19
 Kavli Institute for the Physics and Mathematics of the Universe 3/19
- Learning Physics from Machine Learning
 National Tsing Hua University 11/18
- New Physics and the Higgs Trilinear Coupling
 National Chiao-Tung University 12/18
 National Taiwan University 12/18
 National Taiwan Normal University 11/18
 Academia Sinica 10/18

PRESS

- “What are the hot research areas that might spark the next big bang?” Times Higher Education, May 25, 2017
- “Will Our Universe Collide With a Neighboring One?” Discover Magazine, October 2009.
- “How We Could See Another Universe,” Astronomy Magazine, June 2009.
- “When Worlds Collide,” Science News, June 7th, 2008; Vol.173 #18

OUTREACH IN PAST 5 YEARS

- Talk and Q&A at STEMist Education 2023 STEM Frontiers Workshop
- Research lecture to UO Quantastic Physics Student Group 3/21
- Co-led (w/ B. McMorrان) weekly meeting on Quantum Mechanics w/ UO physics majors in Summer 2020
- UO Sail Summer 2020 Physics Slam Talk on Expanding Universe and Group Discussion
- Northstar Lecture on “A Career in Particle Theory” on 4/18
- University of Oregon Quarknet Talks 2016-17, 2020-23.

PROFESSIONAL SERVICE

- University of Oregon: Academic Requirements Committee (2012-14), Career Faculty Committee (2020-2022), Hiring committee for CAS Associate Dean for Student Success (Spring 2022)

- University of Oregon Physics Department: Graduate Admissions Committee (2015), Graduate Studies Committee (2011, 2013-17, 2019), Exam Committee (2012), High Energy Theory Faculty Search Committee (2013), Colloquium Organizer (2014, 2021), Long Range Planning Committee (2016-17), Diversity Committee (2017, 2019-23, Co-Chair 2020-23), Volunteer Mentor for a Physics Undergraduate (2020-21), and Post-Tenure Review Committee (2021-22).
- Institute for Fundamental Science Promotion Review Committee (2020), Institute for Theoretical Science Leadership Committee (2017-19)
- Referee for Physical Review Letters, Physical Review D, Journal of High Energy Physics, Journal of Cosmology and Astroparticle Physics, European Physical Journal C, Physics Letters B, Physics of the Dark Universe (Awarded as a 2014 most valued reviewer), DOE grants (2021 mail-in reviewer, 2023 panel reviewer), NSF grants and NSF Physics frontier center.
- Co-organizer for the HEP/Astro Results Forum online seminar series, discussing the latest results from the LHC and astrophysics/cosmology experiments.
- Co-organizer for January 2018 Conference for Women Undergraduates in Physics at the University Oregon
- Convener for parallel sessions at SUSY Conference (2015, 2019) and LHCP Conference 2023

REFERENCES

Nima Arkani-Hamed (e-mail: arkani@ias.edu; phone: (609)734-8058)
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Markus Luty (e-mail: luty@physics.ucdavis.edu; phone: (530)754-8376)
 Professor of Physics, University of California at Davis
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Neal Weiner (e-mail: nw32@nyu.edu; phone: (212)992-8784)
 Professor of Physics, New York University
 Meyer Hall 504; 4 Washington Place; New York, NY 10003

PUBLICATIONS,
PREPRINTS AND
UNREFEREED
WHITE PAPERS
(**unpublished**
are asterisked
at the
beginning)

- 1) *L. Bradshaw and S. Chang, “Primary Observables for Top Quark Collider Signals,” [arXiv:2304.06063 [hep-ph]].
- 2) S. Chang, M. Chen, D. Liu and M. A. Luty, “Primary observables for indirect searches at colliders,” JHEP **07**, 030 (2023) doi:10.1007/JHEP07(2023)030.
- 3) *S. Dawson, P. Meade, I. Ojalvo, C. Vernieri, S. Adhikari, F. Abu-Ajamieh, A. Alberta, H. Bahl, R. Barman and M. Basso, *et al.* “Report of the Topical Group on Higgs Physics for Snowmass 2021: The Case for Precision Higgs Physics,” [arXiv:2209.07510 [hep-ph]].
- 4) J. Aalbers, *et al.* “A next-generation liquid xenon observatory for dark matter and neutrino physics,” J. Phys. G **50**, no.1, 013001 (2023)
- 5) L. Bradshaw, S. Chang and B. Ostdiek, “Creating simple, interpretable anomaly detectors for new physics in jet substructure,” Phys. Rev. D **106**, no.3, 035014 (2022).
- 6) F. Abu-Ajamieh, S. Chang, M. Chen and M. A. Luty, “Higgs coupling measurements and the scale of new physics,” JHEP **2021**, 056 (2021).
- 7) S. Chang, T. K. Chen and C. W. Chiang, “Distinguishing W' signals at hadron colliders using neural networks,” Phys. Rev. D **103**, no.3, 036016 (2021).
- 8) S. Chang and M. A. Luty, “The Higgs Trilinear Coupling and the Scale of New Physics,” JHEP **20**, 140 (2020).
- 9) S. Chang, T. Cohen and B. Ostdiek, “What is the Machine Learning?,” Phys. Rev. D **97**, no. 5, 056009 (2018).
- 10) G. Barello, S. Chang, C. A. Newby and B. Ostdiek, “Don’t be left in the dark: Improving LHC searches for electron lepton jets,” Phys. Rev. D **95**, no. 5, 055007 (2017).
- 11) S. Chang, “A Simple $U(1)$ Gauge Theory Explanation of the Diphoton Excess,” Phys. Rev. D **93**, no. 5, 055016 (2016).
- 12) G. Barello, S. Chang and C. A. Newby, “Correlated Signals at the Energy and Intensity Frontiers from Nonabelian Kinetic Mixing,” Phys. Rev. D **94**, no. 5, 055018 (2016).
- 13) S. Chang, J. Galloway, M. Luty, E. Salvioni and Y. Tsai, “Phenomenology of Induced Electroweak Symmetry Breaking,” JHEP **1503**, 017 (2015).
- 14) G. Barello, S. Chang and C. A. Newby, “A Model Independent Approach to Inelastic Dark Matter Scattering,” Phys. Rev. D **90**, no. 9, 094027 (2014).
- 15) S. Chang, R. Edezhath, J. Hutchinson and M. Luty, “Leptophilic Effective WIMPs,” Phys. Rev. D **90**, 015011 (2014).

- 16) S. Chang, R. Edezhath, J. Hutchinson and M. Luty, “Effective WIMPs,” *Phys. Rev. D* **89**, 015011 (2014).
- 17) S. Chang and A. Menon, “Discovering Nonstandard Higgs bosons in the $H \rightarrow ZA$ Channel Decay to Multileptons,” *JHEP* **1302**, 152 (2013).
- 18) S. Chang, Y. Gao and M. Spannowsky, “Enhanced Gamma Ray Signals in Cosmic Proton-Wimp Collisions Due to Hadronization,” *JCAP* **1211**, 053 (2012).
- 19) S. Chang, C. A. Newby, N. Raj and C. Wanotayaroj, “Revisiting Theories with Enhanced Higgs Couplings to Weak Gauge Bosons,” *Phys. Rev. D* **86**, 095015 (2012).
- 20) A. Azatov, S. Chang, N. Craig and J. Galloway, “Higgs fits preference for suppressed down-type couplings: Implications for supersymmetry,” *Phys. Rev. D* **86**, 075033 (2012).
- 21) S. Chang, J. Pradler, I. Yavin, “Statistical Tests of Noise and Harmony in Dark Matter Modulation Signals,” *Phys. Rev. D* **85** 063505 (2012).
- 22) S. Chang, J. A. Evans and M. A. Luty, “Early Higgs Boson Discovery in Non-minimal Higgs Sectors,” *Phys. Rev. D* **84** 095030 (2011).
- 23) S. Chang, L. Goodenough, “Charge Asymmetric Cosmic Ray Signals From Dark Matter Decay,” *Phys. Rev. D* **84**, 023524 (2011).
- 24) D. Alves *et al.* [LHC New Physics Working Group Collaboration], “Simplified Models for LHC New Physics Searches,” *J. Phys. G* **39**, 105005 (2012).
- 25) S. Chang, C. Kilic, T. Okui, “Measuring Top Squark Interactions With The Standard Model Through Associated Production,” *Phys. Rev.* **D84**, 035015 (2011).
- 26) S. Chang, N. Weiner and I. Yavin, “Magnetic Inelastic Dark Matter,” *Phys. Rev. D* **82**, 125011 (2010).
- 27) S. Chang, R. F. Lang and N. Weiner, “Effect of Thallium Impurities in the DAMA Experiment on the Allowed Parameter Space for Inelastic Dark Matter,” *Phys. Rev. Lett.* **106**, 011301 (2011).
- 28) S. Chang, J. Liu, A. Pierce, N. Weiner and I. Yavin, “CoGeNT Interpretations,” *JCAP* **1008**, 018 (2010).
- 29) S. Chang, A. Pierce and N. Weiner, “Momentum Dependent Dark Matter Scattering,” *JCAP* **1001**, 006 (2010).
- 30) S. Chang and L. Goodenough, “A New Approach to Searching for Dark Matter Signals in Fermi-LAT Gamma Rays,” *JCAP* **1008**, 035 (2010).
- 31) *S. Chang and M. A. Luty, “Displaced Dark Matter at Colliders,” arXiv: 0906.5013 [hep-ph].

- 32) *S. Chang and T. Gregoire, “Discovering a Nonstandard Higgs in a Standard Way,” arXiv:0903.0403 [hep-ph].
- 33) S. Chang and A. de Gouvea, “Neutrino Alternatives For Missing Energy Events At Colliders,” Phys. Rev. D **80**, 015008 (2009).
- 34) S. Chang, M. Kleban and T. S. Levi, “Watching Worlds Collide: Effects on the CMB from Cosmological Bubble Collisions,” JCAP **0904**, 025 (2009).
- 35) S. Chang, A. Pierce and N. Weiner, “Using the Energy Spectrum at DAMA/LIBRA to Probe Light Dark Matter,” Phys. Rev. D **79** 115011 (2009).
- 36) S. Chang, G. D. Kribs, D. Tucker-Smith and N. Weiner, “Inelastic Dark Matter in Light of DAMA/LIBRA,” Phys. Rev. D **79**, 043513 (2009).
- 37) S. Chang, R. Dermisek, J. F. Gunion and N. Weiner, “Nonstandard Higgs Boson Decays,” Ann. Rev. Nucl. Part. Sci. **58**, 75 (2008).
- 38) S. Chang, M. Kleban and T. S. Levi, “When Worlds Collide,” JCAP **0804**, 034 (2008).
- 39) S. Chang and N. Weiner, “Nonstandard Higgs Decays with Visible and Missing Energy,” JHEP **0805**, 074 (2008).
- 40) S. Chang, P. J. Fox and N. Weiner, “Visible Cascade Higgs decays to Four Photons at Hadron Colliders,” Phys. Rev. Lett. **98**, 111802 (2007).
- 41) S. Chang, L. J. Hall and N. Weiner, “A Supersymmetric Twin Higgs,” Phys. Rev. D **75**, 035009 (2007).
- 42) S. Chang, P. J. Fox and N. Weiner, “Naturalness and Higgs Decays in the MSSM with a Singlet,” JHEP **0608**, 068 (2006).
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- 44) S. Chang and H. J. He, “Unitarity of Little Higgs Models Signals New Physics of UV Completion,” Phys. Lett. B **586**, 95 (2004).
- 45) S. Chang, “A ‘Littlest Higgs’ Model with Custodial SU(2) Symmetry,” JHEP **0312**, 057 (2003).
- 46) S. Chang and J. G. Wacker, “Little Higgs and Custodial SU(2),” Phys. Rev. D **69**, 035002 (2004).
- 47) S. Chang and H. Georgi, “Quantum Modified Mooses,” Nucl. Phys. B **672**, 101 (2003).