

# YUE ZHANG

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## ACADEMIC POSITIONS

Assistant Professor, Carleton University	2019 –
Affiliate Member, Perimeter Institute for Theoretical Physics	2021 –
Research Associate, Fermi National Accelerator Laboratory	2017 – 2019
Postdoctoral Fellow, Northwestern University	2016 – 2019
Postdoctoral Scholar, California Institute of Technology	2013 – 2016
Postdoctoral Fellow, ICTP, Trieste, Italy	2009 – 2012
Graduate Researcher Assistant, University of Maryland, College Park	2007 – 2009

## EDUCATION

Ph. D. in Theoretical Physics, Peking University, China Supervised by: Xiangdong Ji	2004 – 2009
B. Sc. with honors, in optical information science and technology Nankai University, Tianjin, China	2000 – 2004

## AWARDS AND FELLOWSHIPS

COFI Fellowship, Northwestern University	2018
Heising-Simons Postdoctoral Fellowship, University of Florida - declined	2016
Most valued reviewer, Nuclear Physics B	2014
Outstanding Graduate Award, Nankai University	2004
The First Prize Scholarship, Nankai University	2002 – 2003
Shindengen Scholarship, Nankai University	2001

## GRANTS AWARDED AS PRINCIPLE INVESTIGATOR

Subatomic Physics Discovery Grant (Individual), CA\$325,000 Natural Sciences and Engineering Research Council of Canada	2023 – 2028
Canada First Research Excellence Fund, CA\$420,000 Arthur B. McDonald Canadian Astroparticle Physics Research Institute	2019 – 2023

## MANUSCRIPTS UNDER REVIEW

67. Imperfect Axion Precludes the Domain Wall Problem  
Y. Zhang  
[arXiv:2305.15495 [hep-ph]].

## PUBLICATION IN PEER-REVIEWED JOURNALS

*66 published papers, about 3,300 citations, h-index 33, source: INSPIRE-HEP (9/2023)*

66. Can Neutrino Self-interactions Save Sterile Neutrino Dark Matter?  
V. Gluscevic, E. Nadler, R. An and Y. Zhang  
**Astrophys. J. Lett.** 954, L18 (2023) [arXiv:2301.08299 [astro-ph.CO]].
65. Axion Quality and Fifth Force  
Y. Zhang  
**Phys. Rev. D** 107, 055025 (2023) [arXiv:2209.09429 [hep-ph]].
64. Core-collapse Supernova Constraint on the Origin of Sterile Neutrino Dark Matter via Neutrino Self-interactions  
Y. Chen, M. Sen, W. Tangarife, D. Tuckler and Y. Zhang  
**JCAP** 2211, 014 (2022) [arXiv:2207.14300 [hep-ph]].
63. Dark Matter Dilution Mechanism through the Lens of Large Scale Structure  
M. Nemevšek and Y. Zhang  
**Phys. Rev. Lett.** 130, 121002 (2023) [arXiv:2206.11293 [hep-ph]].
62. Probing Neutrino-Portal Dark Matter at the Forward Physics Facility  
K. Kelly, F. Kling, D. Tuckler and Y. Zhang  
**Phys. Rev. D** 105, 075026 (2022) [arXiv:2111.05868 [hep-ph]].
61. General Kinetic Mixing in Gauged  $U(1)_{L\mu-L\tau}$  Model for Muon  $g-2$  and Dark Matter  
T. Hapitas, D. Tuckler and Y. Zhang  
**Phys. Rev. D** 105, 016014 (2022) [arXiv:2108.12440 [hep-ph]].
60. Neutrino as the Dark Force  
N. Orlofsky and Y. Zhang  
**Phys. Rev. D** 104, 075010 (2021) [arXiv:2106.08339 [hep-ph]].
59. Intimate Relationship between Sterile Neutrino Dark Matter and  $\Delta N_{\text{eff}}$   
K. Kelly, M. Sen and Y. Zhang  
**Phys. Rev. Lett.** 127, 041101 (2021) [arXiv:2011.02487 [hep-ph]].
58. Probing Dark Sector CP Violation with Electric Dipole Moments and Colliders  
C. de Lima, B. Keeshan, H. Logan and Y. Zhang  
**Phys. Rev. D** 103, 115034 (2021) [arXiv:2010.06441 [hep-ph]].
57. Higgs Portal from the Atmosphere to Hyper-K  
P. Archer-Smith and Y. Zhang  
**Phys. Lett. B** 817, 136309 (2021) [arXiv:2005.08980 [hep-ph]].

56. Origin of Sterile Neutrino Dark Matter from Secret Neutrino Interactions with Vector Bosons  
K. Kelly, M. Sen, W. Tangarife and Y. Zhang  
**Phys. Rev. D** 101, 115031 (2020) [arXiv:2005.03681 [hep-ph]].
55. Speeding Up Dark Matter with Solar Neutrinos  
Y. Zhang  
**PTEP** 2022, 013B05 (2022) [arXiv:2001.00948 [hep-ph]].
54. Dodelson-Widrow Mechanism in the Presence of Self-Interacting Neutrinos  
A. de Gouvêa, M. Sen, W. Tangarife and Y. Zhang  
**Phys. Rev. Lett.** 124, 081802 (2020) [arXiv:1910.04901 [hep-ph]].
53. Higgs Portal to Dark QED  
A. Krovi, I. Low and Y. Zhang  
**Phys. Rev. D** 102, 055003 (2020) [arXiv:1909.07987 [hep-ph]].
52. Dark CP Violation and Gauged Lepton or Baryon Number for Electroweak Baryogenesis  
M. Carena, M. Quiros and Y. Zhang  
**Phys. Rev. D** 101, 055014 (2020) [arXiv:1908.04818 [hep-ph]].
51. Mono-Neutrino at DUNE: New Signals from Neutrinophilic Thermal Dark Matter  
K. Kelly and Y. Zhang  
**Phys. Rev. D** 99, 055034 (2019) [arXiv:1901.01259 [hep-ph]].
50. Electroweak Baryogenesis from Dark-Sector CP Violation  
M. Carena, M. Quiros and Y. Zhang  
**Phys. Rev. Lett.** 122, 201802 (2019) [arXiv:1811.09719 [hep-ph]].
49. Dark Tridents at Off-Axis Liquid Argon Neutrino Detectors  
A. de Gouvêa, P. Fox, R. Harnik, K. Kelly and Y. Zhang  
**JHEP** 1901, 001 (2019) [arXiv:1809.06388 [hep-ph]].
48. Broadening Dark Matter Searches at the LHC: Mono-X versus Darkonium Channels  
A. Krovi, I. Low and Y. Zhang  
**JHEP** 1810, 026 (2018) [arXiv:1807.07972 [hep-ph]].
47. Lepton Flavorful Fifth Force and Depth-dependent Neutrino Matter Interactions  
M. B. Wise and Y. Zhang  
**JHEP** 1806, 053 (2018) [arXiv:1803.00591 [hep-ph]].
46. Lepton-Number-Charged Scalars and Neutrino Beamstrahlung  
J. Berryman, A. de Gouvêa, K. Kelly and Y. Zhang  
**Phys. Rev. D** 97, 075030 (2018) [arXiv:1802.00009 [hep-ph]].
45. Top-philic  $Z'$  Forces at the LHC  
P. Fox, I. Low and Y. Zhang  
**JHEP** 1803, 074 (2018) [arXiv:1801.03505 [hep-ph]].
44. Self-Destructing Dark Matter  
Y. Grossman, R. Harnik, O. Telem and Y. Zhang  
**JHEP** 1907, 017 (2019) [arXiv:1712.00455 [hep-ph]].
43. Dark Matter and Neutrino Mass in the Smallest Non-abelian Chiral Dark Sector  
J. Berryman, A. de Gouvêa, K. Kelly and Y. Zhang  
**Phys. Rev. D** 96, 075010 (2017) [arXiv:1706.02722 [hep-ph]].

42. Cosmic Selection Rule for Glueball Dark Matter Relic Density  
A. Soni, H. Xiao and Y. Zhang  
**Phys. Rev. D** 96, 083514 (2017) [arXiv:1704.02347 [hep-ph]].
41. Reappraisal of Dark Matter Co-annihilating with a Top or Bottom Partner  
W. Keung, I. Low and Y. Zhang  
**Phys. Rev. D** 96, 015008 (2017) [arXiv:1703.02977 [hep-ph]].
40. Self-interacting Dark Matter Without Direct Detection Constraints  
Y. Zhang  
**Phys. Dark Univ.** 15, 82 (2017) [arXiv:1611.03492 [hep-ph]].
39. Strong CMB Constraint on P-wave Annihilating Dark Matter  
H. An, M. B. Wise and Y. Zhang  
**Phys. Lett. B** 773, 121 (2017) [arXiv:1606.02305 [hep-ph]].
38. Effects of Bound States on Dark Matter Annihilation  
H. An, M. B. Wise and Y. Zhang  
**Phys. Rev. D** 93, 115020 (2016) (**Editor's Suggestion**) [arXiv:1604.01776 [hep-ph]].
37. Hidden SU(N) Glueball Dark Matter  
A. Soni and Y. Zhang  
**Phys. Rev. D** 93, 115025 (2016) [arXiv:1602.00714 [hep-ph]].
36. Probing the Dark Sector with Dark Matter Bound States  
H. An, B. Echernard, M. Pospelov and Y. Zhang  
**Phys. Rev. Lett.** 116, 151801 (2016) [arXiv:1510.05020 [hep-ph]].
35. Higgs CP Violation From Vectorlike Quarks  
C. Chen, S. Dawson and Y. Zhang  
**Phys. Rev. D** 92, 075026 (2015) [arXiv:1507.07020 [hep-ph]].
34. Baryon Number Violation via Majorana Neutrinos in the Early Universe, at the LHC, and Deep Underground  
H. Davoudiasl and Y. Zhang  
**Phys. Rev. D** 92, 016005 (2015) [arXiv:1504.07244 [hep-ph]].
33. Complementarity of LHC and EDMs for Exploring Higgs CP Violation  
C. Chen, S. Dawson and Y. Zhang  
**JHEP** 1506, 056 (2015) [arXiv:1503.01114 [hep-ph]].
32. Long-lived Light Mediator to Dark Matter and Primordial Small Scale Spectrum  
Y. Zhang  
**JCAP** 1505, 008 (2015) [arXiv:1502.06983 [hep-ph]].
31. Yukawa Bound States of a Large Number of Fermions  
M. B. Wise and Y. Zhang  
**JHEP** 1502, 023 (2015) [arXiv:1411.1772 [hep-ph]].
30. Stable Bound States of Asymmetric Dark Matter  
M. B. Wise and Y. Zhang  
**Phys. Rev. D** 90, 055030 (2014) [arXiv:1407.4121 [hep-ph]].
29. Supernova Cooling in a Dark Matter Smog  
Y. Zhang  
**JCAP** 1411, 042 (2014) [arXiv:1404.7172 [hep-ph]].

28. Effective Theory and Simple Completions for Neutrino Interactions  
M. B. Wise and Y. Zhang  
**Phys. Rev. D** 90, 053005 (2014) [arXiv:1404.4663 [hep-ph]].
27. CP-Violating Phenomenology of Flavor Conserving Two Higgs Doublet Models  
S. Inoue, M. Ramsey-Musolf and Y. Zhang  
**Phys. Rev. D** 89, 115023 (2014) [arXiv:1403.4257 [hep-ph]].
26. Direct Detection of Baryogenesis Mechanism from Squark Decays at LHC  
H. An and Y. Zhang  
**Phys. Rev. D** 89, 071902(R) (2014) [arXiv:1310.2608 [hep-ph]].
25. Electroweak Cogenesis  
C. Cheung and Y. Zhang  
**JHEP** 1309, 002 (2013) [arXiv:1306.4321 [hep-ph]].
24. Impact of a CP-Violating Higgs Sector: from LHC to Baryogenesis  
J. Shu and Y. Zhang  
**Phys. Rev. Lett.** 111, 091801 (2013) [arXiv:1304.0773 [hep-ph]].
23. Top Quark Mediated Dark Matter  
Y. Zhang  
**Phys. Lett. B** 720, 137 (2013) [arXiv:1212.2730 [hep-ph]].
22. On the Higgs Fit and Electroweak Phase Transition  
W. Huang, J. Shu and Y. Zhang  
**JHEP** 1303, 164 (2013) [arXiv:1210.0906 [hep-ph]].
21. Warm Dark Matter in Low Scale Left-Right Theory  
M. Nemevšek, G. Senjanović and Y. Zhang  
**JCAP** 1207, 006 (2012) [arXiv:1205.0844 [hep-ph]].
20. Perturbative Unitarity Constraints on General  $W'$  Models and Collider Implications  
K. Babu, J. Julio and Y. Zhang  
**Nucl. Phys. B** 858, 468-487 (2012) [arXiv:1111.5021 [hep-ph]].
19. Dark Matter as the Trigger of Strong Electroweak Phase Transition  
T. Chowdhury, M. Nemevšek, G. Senjanović and Y. Zhang  
**JCAP** 1202, 029 (2012) [arXiv:1110.5334 [hep-ph]].
18. Type II Neutrino Seesaw Mechanism at the LHC: the Roadmap  
A. Melfo, M. Nemevšek, F. Nesti, G. Senjanović and Y. Zhang  
**Phys. Rev. D** 85, 055018 (2012) [arXiv:1108.4416 [hep-ph]].
17. Isospin-violating Dark Matter and Neutrinos from the Sun  
S. Chen and Y. Zhang  
**Phys. Rev. D** 84, 031301(R) (2011) [arXiv:1106.4044 [hep-ph]].
16. Inert Doublet Dark Matter and Mirror/Extra Families after Xenon100  
A. Melfo, M. Nemevšek, F. Nesti, G. Senjanović and Y. Zhang  
**Phys. Rev. D** 84, 034009 (2011) [arXiv:1105.4611 [hep-ph]].
15. First Limits on Left-Right Symmetry Scale From LHC Data  
M. Nemevšek, F. Nesti, G. Senjanović and Y. Zhang  
**Phys. Rev. D** 83, 115014 (2011) [arXiv:1103.1627 [hep-ph]].
14. Effective Angular Momentum Operators in NRQED and Matching at One-loop Order  
P. Chen, X. Ji and Y. Zhang  
**JHEP** 1102, 107 (2011) [arXiv:1012.3668 [hep-ph]].

13. Naturally Light Sterile Neutrinos From Theory of R-parity  
D. Ghosh, G. Senjanović and Y. Zhang  
**Phys. Lett. B** 698, 420 (2011) [arXiv:1010.3968 [hep-ph]].
12. Energy Dependence of Direct Detection Cross Section for Asymmetric Mirror Dark Matter  
H. An, S. Chen, R. Mohapatra, S. Nussinov and Y. Zhang  
**Phys. Rev. D** 82, 023533 (2010) [arXiv:1004.3296 [hep-ph]].
11. MSSM in view of PAMELA and Fermi-LAT  
B. Bajc, D. Ghosh, T. Enkhbat, G. Senjanovic and Y. Zhang  
**JHEP** 1005, 048 (2010) [arXiv:1002.3631 [hep-ph]].
10. Leptogenesis as a Common Origin for Matter and Dark Matter  
H. An, S. Chen, R. Mohapatra and Y. Zhang  
**JHEP** 1003, 124 (2010) [arXiv:0911.4463 [hep-ph]].
9. Angular Momentum in NRQED and Photon Contribution to Spin of Hydrogen Atom  
P. Chen, X. Ji, Y. Xu and Y. Zhang  
**Phys. Lett. B** 688, 55 (2010) [arXiv:0909.1560 [hep-ph]].
8. R-parity Breaking via Type-II Seesaw, Decaying Gravitino Dark Matter and PAMELA Positron Excess  
S. Chen, R. Mohapatra, S. Nussinov and Y. Zhang  
**Phys. Lett. B** 677, 311 (2009) [arXiv:0903.2562 [hep-ph]].
7. A Model with Spontaneous R-parity Breaking and Unstable Gravitino Dark Matter  
X. Ji, R. Mohapatra, S. Nussinov and Y. Zhang  
**Phys. Rev. D** 78, 075032 (2008) [arXiv:0808.1904 [hep-ph]].
6. Light Higgs Mass Bound in SUSY Left-Right Models  
H. An, X. Ji, R. Mohapatra and Y. Zhang  
**Phys. Rev. D** 78, 011302 (R) (2008) [arXiv:0804.0268 [hep-ph]].
5. General CP Violation in Minimal Left-Right Symmetric Model and Constraints on the Right-handed Scale  
H. An, X. Ji, R. Mohapatra and Y. Zhang  
**Nucl. Phys. B** 802, 247-279 (2008) [arXiv:0712.4218 [hep-ph]].
4. Constraining Right-handed Scale Through Kaon Mixing in SUSY Left-Right Model  
H. An, X. Ji and Y. Zhang  
**Phys. Rev. D** 78, 035006 (2008) [arXiv:0710.1454 [hep-ph]].
3. Right-handed Quark Mixings in Minimal Left-Right Symmetric Model with General CP Violation  
H. An, X. Ji, R. Mohapatra and Y. Zhang  
**Phys. Rev. D** 76, 091301(R) (2007) [arXiv:0704.1662 [hep-ph]].
2. Leptogenesis in Realistic SO(10) Models  
X. Ji, Y. Li, R. Mohapatra, S. Nasri and Y. Zhang  
**Phys. Lett. B** 651, 195-207 (2007) [arXiv:hep-ph/0605088 [hep-ph]].
1. Berry Phase in Neutrino Oscillations  
X. He, X. Li, B. McKellar and Y. Zhang  
**Phys. Rev. D** 72, 053012 (2005) [arXiv:hep-ph/0412374 [hep-ph]].

## COMMUNITY REPORTS AND PROCEEDINGS

- R9 Snowmass Whitepaper: Neutrino Self-Interactions, **Phys. Dark Univ.** 42, 101267 (2023).
- R8 Snowmass Whitepaper: The Forward Physics Facility at the High-Luminosity LHC, **J. Phys. G** 50 (2023) 3, 030501
- R7 The Forward Physics Facility: Sites, Experiments, and Physics Potential, **Phys. Rept.** 968 (2022) 1-50
- R6 Canadian Astroparticle Physics Community Planning: Dark Matter Green Paper (2020).
- R5 Dark Sectors 2016 Workshop: Community Report, arXiv:1608.08632 [hep-ph]
- R4 Baryon Number Violation via Majorana Neutrinos, AIP Conf. Proc. 1743, 030011 (2016).
- R3 CEPC-SPPC Preliminary Conceptual Design Report. 1. Physics and Detector, IHEP-CEPC-DR-2015-01 (2015), [link to PDF](#)
- R2 Seesaw Theories at LHC and Warm Dark Matter, AIP Conf. Proc. 1604, 279 (2014).
- R1 Higgs Working Group Report of Snowmass 2013 Community Planning Study, arXiv:1310.8361 [hep-ph]

## PRESENTATIONS AT CONFERENCES AND WORKSHOPS

- 55. CAP Congress, University of New Brunswick, Fredericton Jun 2023  
**Contributed talk:** *Dark Matter Dilution Mechanisms and Large Scale Structure*
- 54. McDonald Research Partnership-Building Workshop: New insights into particle physics from quantum information and gravitational waves, U. of Lethbridge Jun 2023  
**Invited talk:** *Dark Matter from Early Universe Neutrino Oscillation*
- 53. Portorož Conference, Slovenia Apr 2023  
**Invited talk:** *Dark Matter Dilution Mechanism and Large Scale Structure*
- 52. Dark Matter as a Portal to New Physics Workshop, APCTP, Korea Jan 2023  
**Invited talk:** *Sterile Neutrino Dark Matter and Neutrino Self-interaction*
- 51. Dark Interactions Workshop, BNL (online) Nov 2022  
**Plenary talk:** *Dark Matter as General Thermal Relics*
- 50. International Conference on Neutrinos and Dark Matter, Egypt (online) Sep 2022  
**Plenary talk:** *Sterile Neutrino Dark Matter and Neutrino Self-interaction*
- 49. MIAPP Workshop on Novel Hidden Sectors, Germany May 2022  
**Invited talk:** *Sterile Neutrino Dark Matter and Neutrino Self-interaction*
- 48. 59th Winter Nuclear and Particle Physics Conference, TRIUMF (online) Feb 2022  
**Invited talk:** *Exploring Novel Dark Matter-Neutrino Connections*
- 47. Brookhaven Forum (online) Nov 2021  
**Contributed talk:** *New Target and Probes of Sterile Neutrino Dark Matter*
- 46. PANIC 2021, Lisbon Portugal (online) Sep 2021  
**Contributed talk:** *New Target and Probes of Sterile Neutrino Dark Matter*
- 45. TAUP 2021, University of Valencia (online) Sep 2021  
**Contributed talk:** *New Target and Probes of Sterile Neutrino Dark Matter*

44. Institute of Particle Physics Town Hall, Toronto (online) Jul 2020  
**Invited talk:** Novel Aspects of Dark Matter Direct Detection
43. CAP Congress Virtual Sessions, McMaster University (online) Jun 2020  
**Invited talk:** Dodelson-Widrow and Self-interacting Neutrinos
42. TRIUMF Dark Matter Workshop Mar 2020  
**Invited talk:** Dodelson-Widrow and Self-Interacting Neutrino
41. OCIP Research Symposium, University of Ottawa Dec 2019  
**Invited talk:** New Ideas to Hunt Dark Matter
40. Current Trends in Particle Theory, University of Illinois, Chicago Jun 2019  
**Invited talk:** New Dark Matter Signals at Neutrino Detectors
39. PITT PACC Workshop: BSM circa 2020, Pittsburgh Mar 2019  
**Invited talk:** Dark Matter at Neutrino Detectors
38. Fermilab DUNE Near Detector Workshop Dec 2018  
**Invited talk:** Dark Tridents at Liquid Argon Near Detectors
37. Aspen Center for Physics Sep 2018  
**Contributed talk:** Electroweak baryogenesis with gauged lepton number
36. Santa Fe Summer Workshop Jul 2018  
**Invited talk:** Self-Destructing Dark Matter
35. COFI Workshop, Puerto Rico May 2018  
**Invited talk:** Theoretical Overview of Dark Photons
34. KICP Workshop, University of Chicago Apr 2018  
**Invited talk:** Self-Destructing Dark Matter
33. TRIUMF Workshop Feb 2018  
**Invited talk:** Probing CP Violation From Two Higgs Doublet Sector
32. Brookhaven Forum Oct 2017  
**Contributed talk:** Self-Destructing Dark Matter
31. TeVPA Conference, Ohio State University Aug 2017  
**Invited talk:** Self-Destructing Dark Matter
30. Santa Fe Workshop Mar 2017  
**Invited talk:** Effects of Bound States on Dark Matter Indirect Detection
29. Simplicity II Workshop, Fermilab Sep 2016  
**Invited talk:** Composite Dark Matter
28. Santa Fe Summer Workshop Jul 2016  
**Invited talk:** Effects of Bound States on Dark Matter Annihilation
27. International Workshop on Heavy Quarkonium, Richland, WA Jun 2016  
**Invited talk:** Dark Matter Bound States and Collider Signatures
26. SLAC Dark Sector Workshop Apr 2016  
**Invited talk:** New States from Simple Dark Sectors
25. Brookhaven Forum Oct 2015  
**Contributed talk:** Baryon Number Violation via Majorana Neutrinos
24. Aspen Center for Physics Aug 2015  
**Contributed talk:** Light Mediator and Dark Matter Bound States



23. CETUP\* Workshop, Lead, SD Jul 2015  
**Contributed talk:** Baryon Number Violation via Majorana Neutrinos
22. Mitchell Workshop, Texas A & M University May 2015  
**Invited talk:** Light Mediator and Dark Matter Bound States
21. ACFI Workshop, University of Massachusetts, Amherst May 2015  
**Summary talk:** Higgs CP Violation: Some Remarks
20. Center for Future High Energy Physics, Beijing, China Aug 2014  
**Invited talk:** Lecture on Higgs and CP Violation
19. Santa Fe Summer Workshop Jul 2014  
**Contributed talk:** Impact of a CP Violating Higgs boson: LHC, EDM and Cogenesis
18. KITP Workshop, Santa Barbara May 2014  
**Invited talk:** Impact of a CP Violating Higgs boson: LHC, EDM and Cogenesis
17. UCLA Dark Matter Conference Feb 2014  
**Contributed talk:** Electroweak Cogenesis
16. TeVPA Conference, Irvine, CA Aug 2013  
**Contributed talk:** Electroweak Cogenesis
15. CETUP\* Workshop, Lead, SD Jul 2013  
**Invited talk:** Right-handed neutrino as warm dark matter in TeV-scale left-right theory
14. PASCOS Conference, Deadwood, SD Jul 2013  
**Plenary talk:** Testing Neutrino Seesaw at LHC
13. Pheno Symposium, University of Pittsburg May 2013  
**Contributed talk:** Impact of a CP Violating Higgs Boson
12. Snowmass Energy Frontier Workshop, Seattle Jul 2013  
**Invited talk:** Theoretical Perspectives on Higgs CP Mixture
11. Pheno Symposium, University of Pittsburg May 2012  
**Contributed talk:** Dark Matter as Trigger of Strong Electroweak Phase Transition
10. GGI Workshop, Florence, Italy Nov 2011  
**Invited talk:** Dark Matter as Trigger of Strong Electroweak Phase Transition
9. ICTP Workshop on 7 TeV LHC results, Trieste, Italy Sep 2011  
**Invited talk:** Dark Matter as Trigger of Strong Electroweak Phase Transition
8. SUSY Conference, Fermilab Aug 2011  
**Contributed talk:** Inert Doublet Dark Matter and Extra Families
7. Planck Conference, Lisbon, Portugal Jun 2011  
**Contributed talk:** Inert Doublet Dark Matter and Extra Families
6. Pheno Symposium, University of Wisconsin, Madison, May 2011  
**Contributed talk:** Dynamical R-parity Breaking: From Cosmology to Early LHC
5. GoranFest, Split, Croatia May 2011  
**Invited talk:** Asymmetric Mirror Dark Matter and Energy Dependent Direct Detection
4. Portorož Conference, Slovenia Apr 2011  
**Invited talk:** Dynamical R-parity Breaking: From Cosmology to Early LHC
3. Planck Conference, CERN Jun 2010  
**Contributed talk:** MSSM and Gravitino DM in view of PAMELA and Fermi-LAT
2. Workshop on possible parity restoration at high energy, Beijing Jun 2007  
**Contributed talk:** General CP Violation in the Minimal Left-Right Symmetric Model
1. International Symposium neutrino physics and neutrino cosmology, Hong Kong Jan 2007  
**Contributed talk:** Leptogenesis in SO(10) Models

## DEPARTMENTAL COLLOQUIA

5. Queen's University, Kingston	Oct 2021
4. Oklahoma State University	Apr 2019
3. Carleton University	Mar 2019
2. University of Notre Dame	Mar 2019
1. York University	Mar 2014

## INVITED SEMINARS

62. McGill University	Nov 2023
61. Cornell University	Oct 2023
60. Brookhaven National Laboratory (online)	Jul 2023
59. Institute for Basic Science, Korea (online)	Apr 2021
58. Los Alamos National Laboratory (online)	Feb 2021
57. UC Berkeley and LBNL (online)	Nov 2020
56. Jožef Stefan Institute, Slovenia (online)	Jul 2020
55. University of Kentucky	Dec 2019
54. Virginia Tech	Sep 2019
53. Case Western Reserve University	Apr 2019
52. University of Notre Dame	Mar 2019
51. University of Chicago	Jan 2019
50. COFI Seminar (online)	Sep 2018
49. Brookhaven National Laboratory	Aug 2018
48. Washington University, St Louis	Apr 2018
47. Harvard University	Feb 2018
46. Northwestern University	Jan 2018
45. University of Notre Dame	May 2017
44. Cornell University	Apr 2017
43. University of Michigan	Mar 2017
42. University of Illinois, Chicago	Jan 2017
41. Los Alamos National Laboratory (online)	Jan 2017
40. Brookhaven National Laboratory	Jan 2017
39. University of Wisconsin, Madison	Dec 2016
38. Fermilab Astro Seminar	Nov 2016
37. University of Minnesota	Nov 2016
36. Argonne National Laboratory	Oct 2016
35. Los Alamos National Laboratory	May 2016
34. University of California, San Diego	Apr 2016
33. Los Alamos National Laboratory (online)	Jan 2016
32. University of California, Santa Barbara	Dec 2015
31. University of Texas, Austin	Nov 2015
30. University of California, Riverside	Nov 2015
29. Stony Brook University	Apr 2015
28. Los Alamos National Laboratory	Mar 2015
27. Brookhaven National Laboratory	Jan 2015

26. University of California, Riverside	Dec 2014
25. Texas A & M University	Nov 2014
24. TRIUMF	Oct 2014
23. Fermilab Theory Group	Oct 2014
22. University of Illinois Urbana-Champaign	Oct 2014
21. SLAC Theory Group	May 2014
20. University of Chicago	Jan 2014
19. University of California, Riverside	Nov 2013
18. University of California, Irvine	Nov 2013
17. Perimeter Institute	Sep 2013
16. University of Maryland, College Park	Apr 2013
15. Kavli Institute of Theoretical Physics China	Jan 2013
14. Tsinghua University, China	Jul 2012
13. Jožef Stefan Institute, Slovenia	May 2012
12. California Institute of Technology	Apr 2012
11. University of Montpellier II, France	Apr 2012
10. Korea Institute for Advanced Study, Seoul, South Korea	Feb 2012
9. Korea University, Seoul, South Korea	Feb 2012
8. Oklahoma State University	Sep 2011
7. Huazhong Normal University, Wuhan, China	Jul 2011
6. University of Maryland, College Park	May 2011
5. Shanghai Jiao Tong University, China	Jan 2011
4. ICTP Trieste	Dec 2009
3. Jožef Stefan Institute, Slovenia	Nov 2009
2. Peking University	Apr 2009
1. University of Maryland, College Park	Jun 2007

## SUPERVISING AT CARLETON

### Postdocs

Saeid Foroughi-Abari (2023 – present)  
 Nicholas Orlofsky (2020 – 2023) → Postdoc at University of Warsaw, Poland  
 Douglas Tuckler (2020 – 2023) → Postdoc at TRIUMF/Simon Fraser University  
 Alberto Toneri (2019 – 2022) → Postdoc at Kennesaw State University, USA  
 Yongcheng Wu (2019 – 2020) → Faculty position at Nanjing Normal University, China  
 Catarina Cosme (2019 – 2020) → Postdoc at University of Valencia, Spain  
 Wafia Bensalem (2019 – 2022) → Lecturer at Carleton University  
 Máira Dutra (2019 – 2022)

### PhD students

(† information supervision)

Yu-Ming Chen (Sep 2021 – present).  
 Carlos Henrique de Lima<sup>†</sup> (2020 – 2021) → Postdoc at TRIUMF  
 Ben Keeshan<sup>†</sup> (2020 – 2021) → Postdoc at Carleton (Engineering Department)

Paul Archer-Smith<sup>†</sup> (2019 – 2021) → Data scientist in Ottawa

### **Master students**

Timothy Hapitas (2020 – 2023) → PhD at Queen's University Kingston

### **Undergraduate students**

Jiapeng Zhang, Honours project (2022 – 2023) → MSc at University of Geneva

Laura White, Honours project (2021 – 2022)

Roxane Thériault, McGill U., NSERC USRA, (Summer 2021) → MSc at ETH Zürich

Timothy Hapitas (Summer 2020) → MSc at Carleton, PhD at Queen's

## **COURSES TAUGHT AT CARLETON**

PHYS 2203 Astronomy	Fall 2023
PHYS 5702 Relativistic Quantum Mechanics	Winter 2023
PHYS 6602 Advanced Topics in Particle Physics (dark matter)	Winter 2023
PHYS 6601 Particle Physics Phenomenology	Fall 2022
PHYS 5402/4202 Cosmology	Winter 2022
PHYS 3701 Elements of Quantum Mechanics	Winter 2021
PHYS 6602 Advanced Topics in Particle Physics (dark matter)	Winter 2021
PHYS 6601 Particle Physics Phenomenology	Fall 2020
PHYS 3701 Elements of Quantum Mechanics	Winter 2020

## **OTHER TEACHING EXPERIENCES**

Tutorial lectures: Introduction to Particle Physics, ICTP Trieste	Fall 2010, 2012
Tutorial lectures: The Standard Model, ICTP Trieste	Spring 2012
Teaching Assistant: Introduction to Particle Physics, Peking University	Fall 2006

## **SERVICE WITHIN CARLETON**

Member of Recruitment and Retention Committee	2022 – 2024
Member of Graduate Studies Committee	2021 – 2024
Departmental Examiner of MSc Defense (Kamal Maayergi)	2023
PhD comprehensive examination committee (Ishan Kiritbhai Vyas)	2023
Member of Tenure and Promotion Committee	2022 – 2023
PhD Advisory Committee (Carlos de Lima)	2020 – 2022
Member of Physics Colloquium Organizing Committee	2020 – 2022
Chair of MSc defense (Brandon Death)	2021
Chair of MSc defense (David Gallacher)	2021
Member of Tenure and Promotion Committee	2020 – 2021
PhD comprehensive examination committee (Carlos de Lima)	2020

Member of Recruitment and Retention Committee	2019 – 2020
Member of Theoretical Physics Faculty Search Committee	2019 – 2020

## SERVICE TO COMMUNITY

External Examiner of PhD Defense (Matteo Puel) McGill University	2023
Reviewer of Canada Research Chair Tier 2 nomination	2022
Editor of Snowmass White Paper on Neutrino Self-Interactions	2022
External Examiner of PhD Defense (Andrew Parks) University of Ottawa	2022
Session Chair at 59th Winter Nuclear & Particle Physics Conference	2022
External Examiner of PhD Defense (Amit Bhoonah) Queen's University	2021
Session Chair at Astrophysics Meets BSM, Brookhaven Forum	2021
Session Chair at R1-6 Particle Theory, CAP Virtual Congress	2021
External Reviewer of a NSERC Discovery Grant proposal	2020
Referee: Physical Review Letters, Physical Review D, Physics Letters B, Journal of High Energy Physics, Nuclear Physics B, Europhysics Letters, Modern Physics Letters A, International Journal of Modern Physics A SciPost Physics	

## CONFERENCE ORGANIZATION

Co-organizer: Chicago Workshop on Dark Matter and Neutrino Physics Loyola University Chicago, USA	2023
Co-organizer: Workshop on the CP Nature of the Higgs Boson University of Massachusetts Amherst, USA	2015
Scientific secretary: Workshop on Origin of Neutrino Mass International Center for Theoretical Physics, Trieste, Italy	2013
Scientific secretary: Summer School on Particle Physics International Center for Theoretical Physics, Trieste, Italy	2011
Co-organizer: Particle physics seminars Carleton University, Canada	2022 – present
Co-organizer: HECAP group seminars International Center for Theoretical Physics, Trieste, Italy	2010 – 2012

## OUTREACH

Virtual communication with grade 10, Merivale High School Ottawa	May 2022
Introduction to career as a theoretical physicist	
<i>Plates and a Prof</i> , Carleton Physics Society, Online	Oct 2020
Invited talk: Probing the Dark Side of Our Universe	

## **MEDIA**

McDonald Institute Astroparticle Physics News: *Neutrino as the Dark Force* 2021

Carleton Newsroom: *Carleton Physicists Search for Particles Beyond Standard Model of Particle Physics* 2020