

## CURRICULUM VITAE

### A. BIOGRAPHICAL INFORMATION

#### 1. PERSONAL

- **Name:** David Curtin
- **University Address:** MP1113, Department of Physics, 60 St. George Street, University of Toronto, Toronto, Ontario M5S 1A7, Canada
- **Cell Phone:** +1 416-712-9636
- **Office Phone:** +1 416-978-4784
- **Email:** dcurtin@physics.utoronto.ca

#### 2. DEGREES

- *Ph.D.: May 2011*  
Cornell University, Ithaca, New York  
Thesis Title: "Model Building and Collider Physics Above the Weak Scale"  
Advisor: Csaba Csaki
- *Bachelor of Science: First Class Honors, Nov 2005*  
University of Melbourne, Melbourne, Australia  
Thesis Title: "Fermion confinement in brane world models with SO(10) unification"  
Advisor: Raymond Volkas
- *Bachelor of Science (Advanced Stream) with High Distinction: Nov, 2004*  
University of Sydney, Sydney, Australia  
Majors: Physics and Pure Mathematics

#### 3. EMPLOYMENT

- University of Toronto, Toronto, Ontario, Canada  
Assistant Professor, Department of Physics: Jan 2018 - present
- Maryland Center for Fundamental Physics, University of Maryland, College Park, MD  
Postdoctoral Research Associate: Aug 2014 - Dec 2017
- C.N. Yang Institute for Theoretical Physics, Stony Brook University, New York  
Postdoctoral Research Associate: Aug 2011 - Aug 2014
- Cornell University, Ithaca, New York  
Graduate Research and Teaching Assistant, Department of Physics: Aug 2006 - Mar 2011

#### 4. HONOURS

- Appointed Canada Research Chair in Theoretical Particle Physics, 2018-2023
- Stony Brook University Postdoctoral Achievement Award in Theoretical Physics for 2013
- John and David Boochever Prize Fellowship in Fundamental Theoretical Physics for 2010-11
- Laby Medal for Outstanding Honours Thesis, 2005
- Prestigious Honours Scholarship, 2005
- Melbourne Honors Scholarship, 2005
- Placed on Deans List of Excellence in Academic Performance, Admitted to University of Sydney Talented Students Program to conduct extracurricular research, 2004
- Science Foundation for Physics Scholarship No II, 2003
- Science Foundation for Physics Scholarship No I, 2002

5. **PROFESSIONAL AFFILIATIONS AND ACTIVITIES**

- **MATHUSLA** (MAssive Timing Hodoscope for Ultra-Stable neutraL pArticles) experimental collaboration: co-founder and member, 2016 - ongoing  
<http://mathusla.web.cern.ch>

B. **ACADEMIC HISTORY**

6. A. **RESEARCH ENDEAVOURS**

Theoretical Particle Physics:

Higgs physics; theories and detection of long-lived BSM particles; early universe cosmology, electroweak baryogenesis, gravitational waves; the hierarchy problem, neutral naturalness, composite higgs theories, supersymmetric theories; collider phenomenology; dark matter models, direct detection, implications for stellar astrophysics.

B. **RESEARCH AWARDS** (grants, contracts, fellowships)

NSERC Subatomic Physics Individual Discovery Grant  
“New Approaches to Beyond Standard Model Searches with Colliders and Cosmology”  
April 1, 2018 - Mar 31, 2023, 250k CAD total over 5 years.

Canada Research Chair for Theoretical Particle Physics  
CRC Tier 2, 2018 - 2023  
250k CAD of personal research & cluster research funds over 5 years

C. **PATENTS** awarded

N/A

C. **SCHOLARLY AND PROFESSIONAL WORK**

7. **Refereed publications**

A. **ARTICLES**

*Note that authors are ordered alphabetically on high energy theory papers.*

Closing the light gluino gap with electron-proton colliders  
By David Curtin, Kaustubh Deshpande, Oliver Fischer, Jose Zurita.  
arXiv:1812.01568 [hep-ph].  
10.1103/PhysRevD.99.055011.  
Phys.Rev. D99 (2019) no.5, 055011.

Dynamical Dark Matter, MATHUSLA, and the Lifetime Frontier  
By David Curtin, Keith R. Dienes, Brooks Thomas.  
arXiv:1809.11021 [hep-ph].  
10.1103/PhysRevD.98.115005.  
Phys.Rev. D98 (2018) no.11, 115005.

Cosmological Signatures of a Mirror Twin Higgs  
By Zackaria Chacko, David Curtin, Michael Geller, Yuhsin Tsai.  
arXiv:1803.03263 [hep-ph].  
10.1007/JHEP09(2018)163.  
JHEP 1809 (2018) 163.

New Physics Opportunities for Long-Lived Particles at Electron-Proton Colliders  
By David Curtin, Kaustubh Deshpande, Oliver Fischer, José Zurita.  
arXiv:1712.07135 [hep-ph].  
10.1007/JHEP07(2018)024.  
JHEP 1807 (2018) 024.

Analysis of Long Lived Particle Decays with the MATHUSLA Detector

By David Curtin, Michael E. Peskin.

arXiv:1705.06327 [hep-ph].

10.1103/PhysRevD.97.015006.

Flashes of Hidden Worlds at Colliders

By David Curtin, Raman Sundrum.

arXiv:1702.02524 [hep-ph].

10.1063/PT.3.3594.

Physics Today, June 2017, page 46.

Thermal Resummation and Phase Transitions

By David Curtin, Patrick Meade, Harikrishnan Ramani.

arXiv:1612.00466 [hep-ph].

10.1140/epjc/s10052-018-6268-0.

Eur.Phys.J. C78 (2018) no.9, 787.

Physics at a 100 TeV pp collider: Higgs and EW symmetry breaking studies

By R. Contino et al..

arXiv:1606.09408 [hep-ph].

10.23731/CYRM-2017-003.255.

CERN Yellow Report (2017) no.3, 255-440.

New Detectors to Explore the Lifetime Frontier

By John Paul Chou, David Curtin, H.J. Lubatti.

arXiv:1606.06298 [hep-ph].

10.1016/j.physletb.2017.01.043.

Phys.Lett. B767 (2017) 29-36.

Physics at a 100 TeV pp collider: beyond the Standard Model phenomena

By T. Golling et al..

arXiv:1606.00947 [hep-ph].

10.23731/CYRM-2017-003.441.

CERN Yellow Report (2017) no.3, 441-634.

Data-driven Model-independent Searches for Long-lived Particles at the LHC

By Andrea Coccaro, David Curtin, H.J. Lubatti, Heather Russell, Jessie Shelton.

arXiv:1605.02742 [hep-ph].

10.1103/PhysRevD.94.113003.

Phys.Rev. D94 (2016) no.11, 113003.

A Quirky Probe of Neutral Naturalness

By Zackaria Chacko, David Curtin, Christopher B. Verhaaren.

arXiv:1512.05782 [hep-ph].

10.1103/PhysRevD.94.011504.

Phys.Rev. D94 (2016) no.1, 011504.

Quirky Explanations for the Diphoton Excess

By David Curtin, Christopher B. Verhaaren.

arXiv:1512.05753 [hep-ph].

10.1103/PhysRevD.93.055011.

Phys.Rev. D93 (2016) no.5, 055011.

Towards a No-Lose Theorem for Naturalness

By David Curtin, Prashant Saraswat.

arXiv:1509.04284 [hep-ph].

10.1103/PhysRevD.93.055044.

Phys.Rev. D93 (2016) no.5, 055044.

Discovering Uncolored Naturalness in Exotic Higgs Decays

By David Curtin, Christopher B. Verhaaren.

arXiv:1506.06141 [hep-ph].

10.1007/JHEP12(2015)072.

JHEP 1512 (2015) 072.

A facility to Search for Hidden Particles at the CERN SPS: the SHiP physics case

By Sergey Alekhin et al..

arXiv:1504.04855 [hep-ph].

10.1088/0034-4885/79/12/124201.

Rept.Prog.Phys. 79 (2016) no.12, 124201.

Towards an Understanding of the Correlations in Jet Substructure

By D. Adams et al..

arXiv:1504.00679 [hep-ph].

10.1140/epjc/s10052-015-3587-2.

Eur.Phys.J. C75 (2015) no.9, 409.

Uncovering light scalars with exotic Higgs decays to  $b\bar{b}\mu\mu$

By David Curtin, Rouven Essig, Yi-Ming Zhong.

arXiv:1412.4779 [hep-ph].

10.1007/JHEP06(2015)025.

JHEP 1506 (2015) 025.

Illuminating Dark Photons with High-Energy Colliders

By David Curtin, Rouven Essig, Stefania Gori, Jessie Shelton.

arXiv:1412.0018 [hep-ph].

10.1007/JHEP02(2015)157.

JHEP 1502 (2015) 157.

Testing Electroweak Baryogenesis with Future Colliders

By David Curtin, Patrick Meade, Chiu-Tien Yu.

arXiv:1409.0005 [hep-ph].

10.1007/JHEP11(2014)127.

JHEP 1411 (2014) 127.

Natural SUSY in Plain Sight

By David Curtin, Patrick Meade, Pin-Ju Tien.

arXiv:1406.0848 [hep-ph].

10.1103/PhysRevD.90.115012.

Phys.Rev. D90 (2014) no.11, 115012.

The Double-Dark Portal

By David Curtin, Yuhsin Tsai.

arXiv:1405.1034 [hep-ph].

10.1007/JHEP11(2014)136.

JHEP 1411 (2014) 136.

Exotic decays of the 125 GeV Higgs boson

By David Curtin et al..

arXiv:1312.4992 [hep-ph].

10.1103/PhysRevD.90.075004.

Phys.Rev. D90 (2014) no.7, 075004.

Direct Detection with Dark Mediators

By David Curtin, Ze'ev Surujon, Yuhsin Tsai.

arXiv:1312.2618 [hep-ph].

10.1016/j.physletb.2014.10.027.

Phys.Lett. B738 (2014) 477-482.

Measuring the  $t\bar{t}$  coupling from same-sign dilepton+ $2b$  measurements

By David Curtin, Jamison Galloway, Jay G. Wacker.

arXiv:1306.5695 [hep-ph].

10.1103/PhysRevD.88.093006.

Phys.Rev. D88 (2013) no.9, 093006.

Casting Light on BSM Physics with SM Standard Candles

By David Curtin, Prerit Jaiswal, Patrick Meade, Pin-Ju Tien.

arXiv:1304.7011 [hep-ph].

10.1007/JHEP08(2013)068.

JHEP 1308 (2013) 068.

Boosted Multijet Resonances and New Color-Flow Variables

By David Curtin, Rouven Essig, Brian Shuve.

arXiv:1210.5523 [hep-ph].

10.1103/PhysRevD.88.034019.

Phys.Rev. D88 (2013) 034019.

Charginos Hiding In Plain Sight

By David Curtin, Prerit Jaiswal, Patrick Meade.

arXiv:1206.6888 [hep-ph].

10.1103/PhysRevD.87.031701.

Phys.Rev. D87 (2013) no.3, 031701.

Excluding Electroweak Baryogenesis in the MSSM

By David Curtin, Prerit Jaiswal, Patrick Meade.

arXiv:1203.2932 [hep-ph].

10.1007/JHEP08(2012)005.

JHEP 1208 (2012) 005.

Spontaneous R-symmetry Breaking with Multiple Pseudomoduli

By David Curtin, Zohar Komargodski, David Shih, Yuhsin Tsai.

arXiv:1202.5331 [hep-th].

10.1103/PhysRevD.85.125031.

Phys.Rev. D85 (2012) 125031.

Mixing It Up With MT2: Unbiased Mass Measurements at Hadron Colliders

By David Curtin.

arXiv:1112.1095 [hep-ph].

10.1103/PhysRevD.85.075004.

Phys.Rev. D85 (2012) 075004.

Supersymmetry Breaking Triggered by Monopoles

By Csaba Csaki, David Curtin, Vikram Rantala, Yuri Shirman, John Terning.

arXiv:1108.4415 [hep-th].

10.1103/PhysRevD.85.045014.

Phys.Rev. D85 (2012) 045014.

Singlet-Stabilized Minimal Gauge Mediation

By David Curtin, Yuhsin Tsai.

arXiv:1011.2766 [hep-th].

10.1103/PhysRevD.83.075005.

Phys.Rev. D83 (2011) 075005.

SUSY-Yukawa Sum Rule at the LHC

By Monika Blanke, David Curtin, Maxim Perelstein.

arXiv:1004.5350 [hep-ph].

10.1103/PhysRevD.82.035020.

Phys.Rev. D82 (2010) 035020.

A Flavor Protection for Warped Higgsless Models

By Csaba Csaki, David Curtin.

arXiv:0904.2137 [hep-ph].

10.1103/PhysRevD.80.015027.

Phys.Rev. D80 (2009) 015027.

## B. BOOKS AND/OR CHAPTERS

Handbook of LHC Higgs Cross Sections: 4. Deciphering the Nature of the Higgs Sector

By LHC Higgs Cross Section Working Group (D. de Florian et al.).

arXiv:1610.07922 [hep-ph].

10.23731/CYRM-2017-002.

## C. BOOKS EDITED

N/A

8. **Non-Refereed Publications**

A Letter of Intent for MATHUSLA: a dedicated displaced vertex detector above ATLAS or CMS.  
By MATHUSLA Collaboration (Cristiano Alpigiani et al.).  
arXiv:1811.00927 [physics.ins-det].  
*MATHUSLA Letter of Intent submitted to the LHC Experimental Council in Aug 2018.*

MATHUSLA: A Detector Proposal to Explore the Lifetime Frontier at the HL-LHC  
By MATHUSLA Collaboration (Henry Lubatti, et al.).  
arXiv:1901.04040 [hep-ex].  
*Submitted to European Strategy for Particle Physics Update Dec 2018*

Physics Beyond Colliders at CERN: Beyond the Standard Model Working Group Report  
By J. Beacham et al..  
arXiv:1901.09966 [hep-ex].  
*Summary of Physics Opportunities at CERN Beyond Colliders, Submitted to European Strategy for Particle Physics Update Dec 2018*

9. **Manuscripts/publications, etc. in preparation and submitted to publishers but not yet accepted**

Searching for long-lived particles beyond the Standard Model at the Large Hadron Collider  
By Juliette Alimena et al..  
arXiv:1903.04497 [hep-ex].  
*Will be submitted to peer-reviewed journal.*

Long-Lived Particles at the Energy Frontier: The MATHUSLA Physics Case  
By David Curtin et al..  
arXiv:1806.07396 [hep-ph].  
*Submitted to Reports on Progress in Physics.*

Higgs Physics at the HL-LHC and HE-LHC  
By Physics of the HL-LHC Working Group (M. Cepeda et al.).  
arXiv:1902.00134 [hep-ph].  
*Will be submitted to peer-reviewed journal or published as a CERN monograph.*

10. **Papers presented at meetings and symposia**

*All of the above, see Invited Lectures below.*

11. **Invited Lectures**

**Pre-Eminent Seminars and Colloquia:**

- “Particle Physics at the Lifetime Frontier”, Physics Theory Colloquium,
  - University of Toronto, Toronto, Canada (11 Oct 2018)
  - MIT, Boston, MA (22 Oct 2018)
  - University of Oklahoma, Norman, OK (8 Nov 2018)
  - Carleton University, Carleton, Canada (20 Nov 2018)
- “Long-lived particles at the Energy Frontier”, Plenary talk, 30th Rencontres de Blois on "Particle Physics and Cosmology", Blois, France (5 Jun 2018)
- “Flashes of Hidden Worlds at Colliders”, Physics Theory Colloquium,
  - York University, Toronto ON (6 Feb 2018)
  - University of Oregon, Eugene, OR (16 Nov 2017)
  - Simon Fraser University, Vancouver, Canada (29 Sep 2017)
  - TRIUMF, Vancouver, Canada (28 Sep 2017)
  - UCSC, Santa Cruz, CA (3 April 2017)

- “New physics with exotic or long-lived signatures”, Plenary talk, SEARCH 2016 Workshop, Oxford, U.K. (2 Sep 2016)
- “Neutral Naturalness – Theory and Signatures”, Plenary talk, “Higgs and Beyond” PITT-PACC Workshop, Pittsburgh, PA (3-5 Dec 2015)
- “BSM Higgs Sectors”, Invited talk, “FCC Week 2015”, Washington, DC (23 - 27 Mar 2015)
- “Ratios and characteristic distributions in the search for deviation from the SM productions”, Plenary talk, “Next Steps in the Energy Frontier” Workshop, FNAL, IL (25-28 Aug 2014)
- “Exotic Higgs Sectors”, University of Maryland / John Hopkins Joint Seminar, MA (28 Apr 2014)
- “Exotic Higgs Sectors”, Plenary talk, “Exotics Physics with ATLAS at 14 TeV” Workshop, Eilat, Israel (9 Feb 2014)

**Invited Seminars:**

- “Cosmology and Astrophysics of the Twin Higgs “, Theory Seminar, Leinweber Center for Theoretical Physics, University of Michigan, Ann Arbor, MI (12 April 2019)
- “Cosmology and Astrophysics of the Twin Higgs “, Theory Seminar, Perimeter Institute, Waterloo, Canada (27 Nov 2018)
- “Goals for Invisible Particle Searches at Future Facilities”, Johns Hopkins Workshop on “Beyond Standard Model: Where do we go from here?”, GGI, Florence, Italy (4 Oct 2018)
- “Long Lived Particles”, CERN-CKC workshop on “Physics at the LHC and Beyond”, CERN, Geneva, Switzerland (2 Aug 2018)
- “The Lifetime Frontier”, KITP Workshop on “High Energy Physics at the Sensitivity Frontier “, UCSB, Santa Barbara, CA (23 May 2018)
- “Top-down Physics Case for LLPs @ the LHC”, Searching for long-lived particles at the LHC: Third workshop of the LHC LLP Community, CERN, Geneva (16-18 May 2018)
- “BSM Opportunities at e–p Colliders”, Cornell University, Ithaca, NY (3 Nov 2017)
- “Probing Hidden Sectors with New External Detectors at the HE or HL-LHC”, Workshop on the physics of HL-LHC, and perspectives at HE-LHC, CERN, Geneva (31 Oct 2017)
- “BSM Opportunities at e–p Colliders”, NYU, New York, NY (25 Oct 2017)
- “The MATHUSLA Detector”, University of Toronto Experimental Seminar, ON, Canada (18 Sep 2017)
- “The MATHUSLA Detector: Exploring the Lifetime Frontier and Cosmic Ray Physics”, TeVPA 2017, Columbus, OH (7-11 Aug 2017)
- “Searches for Unconventional Signatures at Future Accelerators”, Gordon Particle Physics Conference, HKUST, Hong Kong (25-30 June 2017)
- “Triggering on Long-Lived Particle Signatures”, 1st workshop of LHC LLP Community, CERN, Geneva (23-26 April 2017)
- “Thermal Resummation and the Electroweak Phase Transition”, UMass Amherst workshop on Electroweak Phase Transition, MA (6-8 April 2017)
- “Flashes of Hidden Worlds at Colliders”, Physics Theory Colloquium, UCSC, Santa Cruz, CA (3 April 2017)
- “Hidden Sectors and New Signatures”, UCLA, Los Angeles, CA (2 March 2017)
- “Hidden Sectors and New Signatures”, UMass Amherst, MA, (23 Feb 2017)
- “Hidden Sectors and New Signatures”, University of Toronto, ON, Canada (13 Feb 2017)
- “Hidden Sectors and New Signatures”, University of Maryland, College Park, MD (10 Feb 2017)
- “Neutral Long-Lived Particle Searches at Future Colliders”, 1st FCC Physics Workshop, CERN, Geneva (16-20 Jan 2017)
- “Neutral Naturalness Phenomenology”, HXSWG Workshop on Exotic Higgs Decays, SLAC, Palo Alto, CA (7 Nov 2016)
- “Exploring the Cosmological Frontier with High Energy Colliders”, SLAC, Palo Alto, CA (4 Nov 2016)
- “The Lifetime Frontier”, Carleton University, ON, Canada (6 Oct 2016)

- “Exotic Physics at the LHC”, Multi-Boson Interaction Workshop, University of Wisconsin-Madison, WI (26. Aug 2016)
- “The Lifetime Frontier”, CERN-Korean Theory Institute on new LHC Data, CERN, Switzerland (29 July 2016)
- “Exotic Higgs Decays and Naturalness”, Brookhaven National Lab, NY (17 May 2016)  
“Discovering Neutral Naturalness”, UC Berkeley, CA (30 Mar 2016)
- “Discovering Neutral Naturalness”, University of Illinois at Urbana-Champaign, IL (14 Mar 2016)
- “Exploring the Cosmological Frontier with High Energy Colliders”, University of Maryland, MD (8 Feb 2016)
- “Discovering Neutral Naturalness”, Harvard University, MA (24 Nov 2015)
- “Discovering Neutral Naturalness”, Workshop on long-lived particle searches, UMass Amherst, MA (12-14 Nov 2015)
- “Discovering Neutral Naturalness”, Workshop on “Discoveries at the Dawn of LHC Run 2”, TRIUMF, BC (28-30 Oct 2015)
- “Discovering Neutral Naturalness”, Rutgers University, NJ (20 Oct 2015) “Discovering Neutral Naturalness”, University of Minnesota, MN (for 16 Oct 2015)
- “Probing Electroweak Baryogenesis at Future Colliders”, Electroweak Baryogenesis Workshop, UMass Amherst, MA (17 Sep 2015)
- “Towards A No-Lose Theorem For Naturalness”, SUSY 15, Lake Tahoe, CA (26 Aug 2015)
- “Probing Uncolored Naturalness”, “Anticipating 14 TeV” Workshop, MIAPP, Munich, Germany (1 Jul 2015)
- “Probing Uncolored Naturalness”, Durham IPPP, United Kingdom (24 Jun 2015) “Probing Uncolored Naturalness”, Oxford University, United Kingdom (23 Jun 2015)
- “Probing Electroweak Baryogenesis with Exotic Higgs Decays”, Higgs Cross Section WG 3 Meeting (Exotic Higgs Decays), Fermilab, IL (21-22 May 2015)
- “BSM Higgs Sectors”, 9th MC4BCM Workshop, Fermilab, IL (18-20 May 2015)
- “Probing Colorless Naturalness”, Institute of Advanced Study, Princeton, NJ (8 May 2015)
- “Probing Colorless Naturalness”, CERN-CKC Theory Institute on Neutral Naturalness, CERN, Switzerland (23-26 Apr 2015)
- “Probing Electroweak Baryogenesis at Future Colliders”, University of Sydney, Australia (14 Apr 2015)
- “Probing Electroweak Baryogenesis at Future Colliders”, University of Melbourne, Australia (2 Apr 2015)
- “BSM Higgs and EW scale baryogenesis”, Higgs & BSM at 100 TeV Workshop, CERN, Switzerland (11-13 Mar 2015)
- “BSM Higgs and EW scale baryogenesis”, FCC Higgs/EWSB WG Meeting, CERN, Switzerland (25 Feb 2015)
- “Probing Electroweak Baryogenesis at Future Colliders”, Aspen Center for Physics, 2015 Winter Workshop (26 Jan - 1 Feb 2015)
- “Excluding Electroweak Baryogenesis at Future Colliders”, University of Cincinnati, OH (20 Jan 2015)
- “Excluding Electroweak Baryogenesis at Future Colliders”, University of Michigan, MI (22 Oct 2014)
- “Excluding Electroweak Baryogenesis at Future Colliders”, University of Delaware, DE (25 Sep 2014)
- “The Double-Dark Portal”, Brookhaven National Lab, NY (30 May 2014)
- “Efficient Simulation of Fake Leptons”, 8th MC4BCM Workshop, IBS, Daejeon, South Korea, (19-24 May 2014)
- “The Double-Dark Portal”, University of Wisconsin-Madison, WI (6. May 2014)
- “SUSY in Standard Model Standard Candles”, FNAL CMS LPC Seminar, IL (2. May 2014)
- “Introduction to Monte Carlo for Particle Physics”, Lectures at CFHEP, Beijing, China (16 Mar - 13 Apr 2014)



- “SUSY in Standard Model Standard Candles”, Natural Supersymmetry Workshop, University of Oregon, OR (10-12 Mar 2014)
- “Exotic Higgs Decays @ 100 TeV”, “BSM Physics Opportunities at 100 TeV” Workshop, CERN, Switzerland (11 Feb 2014)
- “The Double-Dark Portal”, Technion, Israel (3 Feb 2014)
- “The Double-Dark Portal”, Tel Aviv University, Israel (30 Jan 2014)
- “Pseudo-Light Dark Matter”, Princeton, NJ (15 Nov 2013)
- “Sniffing out new physics with Standard Model Standard Candles”, New York University, NY (3 Oct 2013)
- “Sniffing out new physics with Standard Model Standard Candles”, Rutgers University, NJ (10 Sep 2013)
- “Sniffing out new physics with Standard Model Standard Candles”, UC Berkeley, CA (29 May 2013)
- “Sniffing out new physics with Standard Model Standard Candles”, UC Irvine, CA (22 May 2013)
- “Sniffing out new physics with Standard Model Standard Candles”, Caltech, CA (20 May 2013)
- “Sniffing out new physics with Standard Model Standard Candles”, SLAC, CA (15 May 2013)
- “Multi-Jet Resonances and New Color-Flow Variables”, University of Maryland, MD (11 Mar 2013)
- “Multi-Jet Resonances and New Color-Flow Variables”, MIT, MA (25 Feb 2013)
- “Multi-Jet Resonances and New Color-Flow Variables”, Brookhaven National Lab, NY (15 Jan 2013)
- “Multi-Jet Resonances and New Color-Flow Variables”, Florida State University, FL (5 Dec 2012)
- “Multi-Jet Resonances and New Color-Flow Variables”, University of California, Davis, CA (13 Nov 2012)
- “New Electroweak Physics at the LHC”, INFN, Padova, Italy (20 Jul 2012)
- “New Electroweak Physics at the LHC”, DESY, Hamburg, Germany (10 Jul 2012)
- “Singlet-Stabilized Minimal Gauge Mediation”, IPMU, Tokyo, Japan (22 Feb 2012)
- “EdgeFitter: A tool for unbiased mass measurement at hadron colliders”, MC4BCM Workshop, Cornell University, NY (22 - 24 Mar 2012)
- “Mixing It Up With MT2: Unbiased Mass Measurements at Hadron Colliders”, POWLHC Workshop, KEK, Tsukuba, Japan (17 Feb 2012)
- “SUSY-Breaking via Non-Perturbative Monopole Dynamics”, CERN, Geneva, Switzerland (30 Jun 2011)
- “SUSY-Breaking via Non-Perturbative Monopole Dynamics”, University of Western Australia (23 Jun 2011)
- “SUSY-Breaking via Non-Perturbative Monopole Dynamics”, University of Melbourne, Australia (20 Jun 2011)
- “Singlet-Stabilized Minimal Gauge Mediation”, John Hopkins University, MD (15 Apr 2011)
- “Singlet-Stabilized Minimal Gauge Mediation”, University of Chicago, IL (9 Mar 2011)
- “Singlet-Stabilized Minimal Gauge Mediation”, Harvard University, MA (1 Mar 2011)
- “Singlet-Stabilized Minimal Gauge Mediation”, University of California, Berkeley, CA (23 Feb 2011)
- “SUSY Sum Rules and MT2 Combinatorics”, Syracuse University, NY (6 Dec 2010)
- “Singlet-Stabilized Minimal Gauge Mediation”, University of California, Davis, CA (8 Nov 2010)
- “SUSY Sum Rules and MT2 Combinatorics”, University of Florida, FL (12 Oct 2010) “SUSY Sum Rules and MT2 Combinatorics”, University of Michigan, MI (15 Sep 2010)

#### **Other Talks**

- “Thermal Resummation and Phase Transitions”, MIAPP Baryogenesis Workshop, Munich, Germany (13 - 24 Jun 2016)
- “Towards a No-Lose Theorem for Naturalness”, Brookhaven Forum, NY (7-9 Oct 2015)

- “Electroweak Baryogenesis at Future Colliders”, Aspen Center for Physics, 2014 Summer Session (29 Jun - 18 Jul 2014)
- “The Double-Dark Portal”, “New Perspectives on Dark Matter” Workshop, FNAL, Batavia IL (28 Apr - 2 May 2014)
- “Dark Mediator Dark Matter”, Aspen Center for Physics, 2014 Winter Workshop (18 - 24 Jan 2014)
- “Multi-Jet Resonances and New Color-Flow Variables”, BOOST 2013 Workshop, Flagstaff, AZ (12-16 Aug 2013)
- “Multi-Jet Resonances and New Color-Flow Variables”, SB-ATLAS hep-ex Meeting, Stony Brook University, NY (24 Sep 2012)
- “New Electroweak Physics at the LHC”, Aspen Center for Physics, 2012 Summer Session (12 Aug - 2 Sep 2012)
- “Boosted RPV Gluinos”, BOOST 2012 Workshop, Valencia, Spain (23 - 27 Jul 2012)
- “Are Charginos Hiding in Plain Sight?”, CERN BSM-TH Workshop, Geneva, Switzerland (18 - 29 Jun 2012)
- “Supersymmetry Breaking Triggered by Monopoles”, SUSY 11, Fermilab, IL (28 Aug 2011 - 2 Sep 2011)
- “SUSY-Yukawa Sum Rule at the LHC”, SUSY 10, Bonn, Germany (23 Aug 2010)
- “Testing the Stop-Top Cancellation at the LHC”, Pheno 2010 Symposium, University of Wisconsin-Madison, (10 May 2010)
- “Testing the Stop-Top Cancellation at the LHC”, CU-CMS hep-ex Meeting, LEPP, Cornell University (6 May 2010)

#### D. LIST OF COURSES

##### 12. A. Undergraduate courses taught

PHY354: Classical Mechanics

Spring 2018, Spring 2019

University of Toronto, Department of Physics

Primary textbook: Landau and Lifshitz, "Mechanics"

*This course introduces the principle of least action, Lagrangian mechanics, symmetries and conservation laws, central field motion, Euler angles, solid body motion, and motion in noninertial frames. Basic features of Hamiltonian dynamics are also discussed. Other topics will be covered as time permits.*

##### B. Graduate courses taught

PHY2404: Quantum Field Theory II

Spring 2019

University of Toronto, Department of Physics

Primary textbooks: Schwartz “Quantum Field Theory and the Standard Model”, Peskin and Schroeder “An Introduction to Quantum Field Theory”

*This QFT2 course continues the study of quantum field theory started with PHY2403 (QFT1) into more advanced topics. We will be covering: path integral formulation of quantum field theory; loops and renormalization; the renormalization group; non-abelian gauge theories; the Higgs mechanism; anomalies; effective field theory; effective potentials.*

##### C. Theses supervised. Indicate whether primary or secondary supervisor.

N/A

##### D. Other teaching and lectures given

E. **ADMINISTRATIVE POSITIONS**  
(indicate period of service and function)

**Referee Experience:**

- Physical Review Letters
- Physical Review D
- Journal of High Energy Physics
- European Physical Journal C
- Computer Physics Communications

F. **OTHER RELEVANT INFORMATION**

**Organized Workshops and Conferences:**

- Lepton Photon 2019: XXIX International Symposium on Lepton Photon Interactions at High Energies, Toronto, Canada (scheduled 5-10 Aug 2019). Local organizing committee.
- 1st workshop of the MATHUSLA Collaboration, Simons Center, Stony Brook University, Stony Brook, NY (27-31 Aug 2018)
- “New ideas in detecting long-lived particles at the LHC”, Lawrence Berkeley National Laboratory, (10-13 July 2018)
- “Hidden Naturalness Workshop”, University of Maryland, MD (28-30 April 2016)
- “The Many Faces of Naturalness”, Aspen, CO (29 May - 19 Jun 2016)

**Attended Workshops, Conferences and Schools:**

- Johns Hopkins Workshop on “Beyond Standard Model: Where do we go from here?”, GGI, Florence, Italy (4 Oct 2018)
- CERN-CKC workshop on “Physics at the LHC and Beyond”, CERN, Geneva, Switzerland (2 Aug 2018)
- “Long-lived particles at the Energy Frontier”, Plenary talk, 30th Rencontres de Blois on "Particle Physics and Cosmology", Blois, France (5 Jun 2018)
- KITP Workshop on “High Energy Physics at the Sensitivity Frontier”, UCSB, Santa Barbara, CA (23 May 2018)
- Searching for long-lived particles at the LHC: Third workshop of the LHC LLP Community, CERN, Geneva (16-18 May 2018)
- TevPA 2017, Columbus, OH (7-11 Aug 2017)
- Aspen Center for Physics, 2017 Summer Session (24 Jul - 4 Aug 2017)
- Gordon Particle Physics Conference, HKUST, Hong Kong (25-30 June 2017)
- 1st workshop of LHC LLP Community, CERN, Geneva (23-26 April 2017)
- UMass Amherst workshop on Electroweak Phase Transition, MA (6-8 April 2017)
- 1st FCC Physics Workshop, CERN, Geneva (16-20 Jan 2017)
- HXSWG Workshop on Exotic Higgs Decays, SLAC, Palo Alto, CA (7-8 Nov 2016)
- MITP Workshop on “EFTs as Discovery Tools”, Mainz, Germany (5-7 Sep 2016)
- SEARCH 2016 Workshop, Oxford, U.K. (31 Aug - 2 Sep 2016)
- Multi-Boson Interaction Workshop, University of Wisconsin-Madison, WI (26. Aug 2016)
- CERN-Korean Theory Institute on new LHC Data, CERN, Switzerland (25 July - 5 Aug 2016)
- MIAPP Baryogenesis Workshop, Munich, Germany (13 - 24 Jun 2016)
- KITP New Accelerators Workshop, Santa Barbara, CA, (1-2 June 2016)

- Aspen Center for Physics, 2016 Summer Session (30 May - 10 June 2016)
- New Physics at the LHC Workshop, University of Oregon, Eugene, OR (18-20 May 2016)
- KITP EXPERLHC16 Workshop, Santa Barbara, CA, (9-13 May 2016)
- “Higgs and Beyond” PITT-PACC Workshop, Pittsburgh, PA (3-5 Dec 2015)
- Workshop on long-lived particle searches, UMass Amherst, MA (12-14 Nov 2015)
- “Discoveries at the Dawn of LHC Run 2” Workshop, TRIUMF, BC (28-30 Oct 2015)
- Brookhaven Forum, NY (7-9 Oct 2015)
- GGI Workshop “Gearing up for LHC13”, Florence, Italy (7-20 Sep 2015)
- SUSY 15, Lake Tahoe, CA (24-29 Aug 2015)
- “Anticipating 14 TeV” Workshop, MIAPP, Munich, Germany (29 Jun - 12 Jul 2015)
- “Preparing for the HL-LHC” Workshop, Perimeter Institute, ON (8-9 Jun 2015)
- Higgs Cross Section WG 3 Meeting (Exotic Higgs Decays), Fermilab, IL (21-22 May 2015)
- 9th MC4BCM Workshop, Fermilab, IL (18-20 May 2015)
- CERN-CKC Theory Institute on Neutral Naturalness, CERN, Switzerland (23-26 Apr 2015)
- FCC Week 2015, Washington, DC (11-15 Apr 2015)
- Higgs & BSM at 100 TeV Workshop, CERN, Switzerland (11-13 Mar 2015)
- FCC Higgs/EWSB WG Meeting, CERN, Switzerland (25 Feb 2015)
- Aspen Center for Physics, 2015 Winter Workshop (26 Jan - 1 Feb 2015)
- “Next Steps in the Energy Frontier” Workshop, FNAL, IL (25-28 Aug 2014)
- Aspen Center for Physics, 2014 Summer Session (29 Jun - 18 Jul 2014)
- “New Perspectives on Dark Matter” Workshop, FNAL, IL (28 Apr - 2 May 2014)
- “Dark Interactions” Workshop, BNL, NY (11-13 Jun 2014)
- 8th MC4BCM Workshop, IBS, Daejeon, South Korea, (19-24 May 2014)
- “New Perspectives on Dark Matter” Workshop, FNAL, Batavia IL (28 Apr - 2 May 2014)
- “Natural Supersymmetry” Workshop, University of Oregon, OR (10-12 Mar 2014)
- “BSM Physics Opportunities at 100 TeV” Workshop, CERN, Switzerland (10-11 Feb 2013)
- “Exotics Physics with ATLAS at 14 TeV” Workshop, Eilat, Israel (5-9 Feb 2013)
- Aspen Center for Physics, 2014 Winter Workshop (18 - 24 Jan 2014)
- “The DM Paradigm: Current Status and Challenges” Workshop, PCTS, NJ (Oct 16 - 19 2013)
- SEARCH Workshop, Simons Center, Stony Brook, NY (20 - 22 Aug 2013)
- BOOST 2013 Workshop, Flagstaff, AZ (12-16 Aug 2013)
- CERN Visitor, Geneva, Switzerland (29 Jul - 11 Aug 2013)
- Pheno 2013 Symposium, University of Pittsburgh, PA (6 - 8 May 2013)
- Brookhaven Forum, NY (May 1 - 3 2013)
- “Higgs Physics After Discovery”, PCTS, NJ (25 - 26 Apr 2013)
- Snowmass Energy Frontier Meeting at BNL, Brookhaven, NY (3 - 6 Apr 2013)
- Applications of Jet Substructure to New Physics Searches, PI, ON (21 - 24 Feb 2013)
- Aspen Center for Physics, 2012 Summer Session (12 Aug - 2 Sep 2012)
- BOOST’12 Workshop, Valencia, Spain (23 - 27 Jul 2012)
- CERN BSM-TH Workshop, Geneva, Switzerland (18 - 29 Jun 2012)
- MC4BCM Workshop, Cornell University, NY (22 - 24 Mar 2012)
- SEARCH Workshop, University of Maryland, Baltimore, MD (17 - 19 Mar 2012)
- POwLHC Workshop, KEK, Tsukuba, Japan (16 - 18 Feb 2012)
- Brookhaven Forum, Brookhaven National Laboratory, NY (19 - 21 Oct 2011)
- SUSY 11, Fermilab, IL (28 Aug 2011 - 2 Sep 2011)
- Pheno 2011 Symposium, University of Wisconsin-Madison, (9-11 May 2011)

- SUSY 10, Physikalisches Institut, Bonn, Germany (23 - 28 Aug 2010)
- Pheno 2010 Symposium, University of Wisconsin-Madison, (10 - 12 May 2010)
- Prospects in Theoretical Physics, Institute of Advanced Study, Princeton, NJ (19 - 30 Jul 2010)
- Theoretical Advanced Studies Institute, University of Colorado at Boulder (1 - 26 Jun 2009)