

# REBECCA K. LEANE



SLAC National Accelerator Laboratory  
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## RESEARCH INTERESTS

Particle Astrophysics and Cosmology, Physics Beyond the Standard Model  
Expertise: Indirect Dark Matter Detection, New Astroparticle Search Strategies,  
Using Astrophysical Datasets to Investigate New Particles + Dark Matter

## CURRENT APPOINTMENTS

**SLAC National Accelerator Laboratory** 2021–Present  
**Stanford University**  
  
*SLAC Particle Theory Group*  
Associate Staff Scientist  
  
*Kavli Institute for Particle Astrophysics and Cosmology (KIPAC)*  
Senior Member

## PREVIOUS APPOINTMENTS

**SLAC National Accelerator Laboratory** 2020–2021  
*SLAC Particle Theory Group, Stanford University*  
Postdoctoral Research Associate  
  
**Massachusetts Institute of Technology** 2017–2020  
*MIT Center for Theoretical Physics*  
Postdoctoral Research Associate

## EDUCATION

**University of Melbourne** 2013–2017  
*Centre of Excellence for Particle Physics at the Terascale (CoEPP)*  
Ph.D. in Theoretical Particle Physics  
Thesis Advisor: Prof. Nicole Bell  
  
**University of Cambridge** 2012–2013  
*Department of Applied Mathematics and Theoretical Physics (DAMTP)*  
Master of Advanced Study in Mathematics (Part III of the Mathematical Tripos)  
Essay Advisor: Prof. Ben Allanach  
  
**Monash University** 2008–2011  
Bachelor of Science Advanced with Honours  
Majors: Physics and Mathematics. High Distinction.  
Thesis Advisor: Prof. Csaba Balazs

FUNDED GRANTS	NASA Fermi Guest Investigator Program, Cycle 12, <b>\$70,000 USD</b> <i>Characterizing Unresolved Point-Source Populations in the Inner Galaxy</i> Grant No. 80NSSC19K1515, <b>Leane</b> and Slatyer	2019–2020
PRIZES, AWARDS & SCHOLARSHIPS	Chancellor’s Prize for Excellence in the PhD Thesis, U. Melbourne Dean’s Award for Excellence in Graduate Research, U. Melbourne Royal Society of Victoria Young Scientist Research Prize Science Abroad Travelling Scholarship Laby Foundation Early Career Researcher Travel Scholarship Australian Postgraduate Award (APA) Monash Jubilee Honours Scholarship J. L. William Honours Scholarship	2018 2018 2016 2016 2015 2012–2016 2011 2011
PUBLICATIONS	<a href="#">INSPIRE profile</a> and <a href="#">ARXiv publication list</a> Asterisk indicates alphabetical order list (as per convention in theoretical particle physics).	
<u>Journal Articles:</u>		
	30. M. Collier, D. Croon, <b>R. K. Leane*</b> Tidal Love Numbers of Novel and Admixed Celestial Objects To be submitted, [arXiv: <a href="#">2205.15337</a> [gr-qc]]	2022
	29. <b>R. K. Leane*</b> and T. Linden, First Analysis of Jupiter in Gamma Rays and a New Search for Dark Matter Submitted to PRL, [arXiv: <a href="#">2104.02068</a> [astro-ph.HE]]	2021
	28. <b>R. K. Leane*</b> , T. Linden, P. Mukhopadhyay, N. Toro, Celestial-Body Focused Dark Matter Annihilation Throughout the Galaxy Phys. Rev. D 103, 075030 (2021), [arXiv: <a href="#">2101.12213</a> [astro-ph.HE]]	2021
	27. <b>R. K. Leane*</b> and J. Smirnov Exoplanets as Sub-GeV Dark Matter Detectors Phys. Rev. Lett. 126, 161101 (2021), [arXiv: <a href="#">2010.00015</a> [hep-ph]] <i>Selected as PRL Editor’s Suggestion, Featured in APS Physics</i>	2020
	26. D. Croon, G. Elor, <b>R. K. Leane*</b> , S. McDermott Supernova Muons: New Constraints on $Z'$ Bosons, Axions, and ALPs JHEP 01 (2021) 107, [arXiv: <a href="#">2006.13942</a> [hep-ph]]	2020
	25. <b>R. K. Leane</b> and T. R. Slatyer Spurious Point Source Signals in the Galactic Center Excess Phys. Rev. Lett. 125, 121105 (2020), [arXiv: <a href="#">2002.12370</a> [astro-ph.HE]]	2020

24. **R. K. Leane** and T. R. Slatyer 2020  
 The Enigmatic Galactic Center Excess:  
 Spurious Point Sources and Signal Mismodeling  
 Phys. Rev. D 102, 063019 (2020), [arXiv:[2002.12371](#)[astro-ph.HE]]
  
23. D. Hooper, **R. K. Leane\***, Y. Tsai, S. Wegsman, S. Witte 2019  
 A Systematic Study of Hidden Sector Dark Matter:  
 Application to the Gamma-Ray and Antiproton Excesses  
 JHEP 07 (2020) 163, [arXiv:[1912.08821](#) [hep-ph]]
  
22. J. Acevedo, J. Bramante, **R. K. Leane\***, N. Raj 2019  
 Cooking Pasta with Dark Matter:  
 Kinetic and Annihilation Heating of Neutron Star Crusts  
 JCAP 03 (2020) 038, [arXiv:[1911.06334](#) [hep-ph]]
  
21. **R. K. Leane** and T. R. Slatyer 2019  
 Dark Matter Strikes Back at the Galactic Center  
 Phys. Rev. Lett. 123 (2019) 241101, [arXiv:[1904.08430](#) [astro-ph.HE]]  
*Selected as PRL Editor's Suggestion, Featured in APS Physics*
  
20. HAWC Collaboration and 2018  
 J.F. Beacom, **R. K. Leane\***, T. Linden, K. C.Y. Ng, A. Peter, B. Zhou  
 Constraints on Spin-Dependent Dark Matter Scattering  
 with Long-Lived Mediators from TeV Observations of the Sun with HAWC  
 Phys. Rev. D 98 (2018), 123012, [arXiv:[1808.05624](#) [hep-ph]].
  
19. HAWC Collaboration and 2018  
 J.F. Beacom, **R. K. Leane\***, T. Linden, K. C.Y. Ng, A. Peter, B. Zhou  
 First HAWC Observations of the Sun Constrain Steady TeV Gamma-Ray Emission  
 Phys. Rev. D 98 (2018), 123011, [arXiv:[1808.05620](#) [astro-ph.HE]]
  
18. **R. K. Leane**, T. R. Slatyer, J. F. Beacom, K. C.Y. Ng 2018  
 GeV-Scale Thermal WIMPs: Not Even Slightly Dead  
 Phys. Rev. D 98 (2018), 023016 [arXiv:[1805.10305](#) [hep-ph]]
  
17. N. F. Bell, Y. Cai, J. B. Dent, **R. K. Leane\***, T. J. Weiler 2017  
 Enhancing Dark Matter Annihilation Rates with Dark Bremsstrahlung  
 Phys. Rev. D 96 (2017), 023011 [arXiv:[1705.01105](#) [hep-ph]]
  
16. **R. K. Leane**, K. C.Y. Ng, J. F. Beacom 2017  
 Powerful Solar Signatures of Long-Lived Dark Mediators  
 Phys. Rev. D 95 (2017), 123016 [arXiv:[1703.04629](#) [astro-ph.HE]]
  
15. N. F. Bell, Y. Cai, **R. K. Leane\*** 2016  
 Impact of Mass Generation for Spin-1 Mediator Simplified Models  
 JCAP 01 (2017) 039 [arXiv:[1610.03063](#) [hep-ph]]

14. N. F. Bell, Y. Cai, **R. K. Leane**\* 2016  
Dark Forces in the Sky: Signals from  $Z'$  and the Dark Higgs  
JCAP 08 (2016) 001 [arXiv:[1605.09382](#) [hep-ph]]
13. N. F. Bell, Y. Cai, **R. K. Leane**\* 2015  
Mono- $W$  Dark Matter Signals at the LHC: Simplified Model Analysis  
JCAP 01 (2016) 051 [arXiv:[1512.00476](#) [hep-ph]]
12. N. F. Bell, Y. Cai, J. B. Dent, **R. K. Leane**\*, T. J. Weiler 2015  
Dark matter at the LHC: Effective field theories and gauge invariance  
Phys. Rev. D92, 053008 (2015) [arXiv:[1503.07874](#) [hep-ph]]
11. N. F. Bell, Y. Cai, **R. K. Leane**\*, A. D. Medina 2014  
Leptophilic dark matter with  $Z'$  interactions  
Phys. Rev. D 90, 035027 (2014) [arXiv:[1407.3001](#) [hep-ph]]

Review Articles:

10. **R. K. Leane** 2020  
Indirect Detection of Dark Matter in the Galaxy  
[arXiv:[2006.00513](#) [hep-ph]]

White Papers:

9. **R. K. Leane**, S. Shin, L. Yang, et al, 2022  
Snowmass2021 Cosmic Frontier:  
Puzzling excesses in dark matter searches and how to resolve them,  
[arXiv:[2203.06859](#) [hep-ph]]  
*Role: Paper coordinator/editor, and leader of the Galactic Center Excess section.*
8. L. Winslow, et al (incl **R. K. Leane**), 2022  
Axion Dark Matter, [arXiv:[2203.14923](#) [hep-ex]]  
*Role: Contributor to “Synergies with astrophysical searches” section.*
7. P. Harding, S. Horiuchi, D. Walker, et al (incl **R. K. Leane**), 2022  
Snowmass2021 Cosmic Frontier:  
Synergies between dark matter searches and multiwavelength/multimessenger astrophysics, [arXiv:[2203.06781](#) [hep-ph]]  
*Role: Contributor to “Searches with Celestial Bodies” section.*
6. D. Carney, N. Raj, et al (incl **R. K. Leane**), 2022  
Snowmass2021 Cosmic Frontier:  
Ultra-heavy particle dark matter, [arXiv:[2203.06508](#) [hep-ph]]  
*Role: Contributor to “Indirect Detection” section.*

5. M Baryakhtar, R. Caputo, D. Croon, K. Perez, et al (incl **R. K. Leane**), 2022  
Dark Matter In Extreme Astrophysical Environments, [arXiv:[2203.07984](#) [hep-ph]]  
*Role: Contributor to “Light Dark Matter” section.*
  
4. K. Boddy, M. Lisanti, S. McDermott, N. Rodd, 2022  
C, Weniger, et al (incl **R. K. Leane**),  
Astrophysical and Cosmological Probes of Dark Matter,  
[arXiv:[2203.06380](#) [hep-ph]]  
*Role: Contributor to “X-ray and  $\gamma$ -ray Dark Matter Signatures” section.*
  
3. T Aramaki, P. von Doetinchem, S. Profumo, et al (incl **R. K. Leane**), 2022  
Snowmass2021 Cosmic Frontier:  
The landscape of cosmic-ray and high-energy photon probes of particle dark matter,  
[arXiv:[2203.06894](#) [hep-ex]]  
*Role: Contributor to “Photon Probes” section.*
  
2. M. Un Nisa, J. F. Beacom, S. Y. BenZvi, 2019  
**R. K. Leane**, T. Linden, K. C.Y. Ng, A. H.G. Peter, B. Zhou  
The Sun at GeV-TeV Energies: A New Laboratory for Astroparticle Physics  
Astro2020 Science White Paper (2019) [arXiv:[1903.06349](#) [astro-ph.HE]]  
*Role: Contributor to paper text, content based in part on my solar dark matter search papers.*
  
1. G. Brooijmans et al (incl **R. K. Leane**) 2012  
Les Houches 2011: Physics at TeV Colliders New Physics Working Group Report  
(2012) [arXiv:[1203.1488](#) [hep-ph]]  
*Role: Contribution 1, “DLHA: Dark Matter Les Houches Agreement”, is heavily based on my bachelor thesis.*

## TALKS

Summary: 10 invited plenary talks, 12 invited colloquia, 51 invited seminars, 25 additional conference/workshop talks (incl. 16 invited). Talks across Australia, Austria, Brazil, Canada, Germany, Guadeloupe, Italy, Japan, New Zealand, Portugal, Spain, Sweden, Switzerland, United Kingdom, and the United States.

### **Invited Plenary/Overview Talks and Colloquia:**

97. Invited Plenary Talk, TeVPA 2022, Kingston ON, Canada	Aug 2022
96. Invited Plenary Talk, Identification of DM 2022, Vienna, Austria	Jul 2022
95. Invited Colloquium, Snowmass Cosmic Frontier Meeting, Online	Jun 2022
94. Invited Overview Talk, HEP/Astro Results Forum, Online	May 2022
93. Invited Colloquium, Munich-Area Physics (TUM/LMU/MPI), Germany	May 2022
92. Invited Colloquium, SLAC, Menlo Park CA, USA	Feb 2022
91. Invited Colloquium, Carleton University, Ottawa, Canada	Dec 2021
90. Invited Colloquium, CERN, Geneva, Switzerland	Oct 2021
89. Invited Plenary Talk, Dark Matter 2021, Santander, Spain	Sep 2021
88. Invited Colloquium, North Carolina State U., Raleigh NC, USA	Sep 2021
87. Invited Plenary Talk, EXPLORE workshop, Germany	Aug 2021
86. Invited Plenary Talk, Planck 2021, Durham, UK	Jun 2021
85. Invited Colloquium, Stockholm University, Stockholm, Sweden	May 2021
84. Invited Colloquium, University of Chicago KICP, Chicago IL, USA	May 2021
83. Invited Colloquium, University at Albany SUNY, Albany NY, USA	Mar 2021
82. Invited Colloquium, Northeastern University, Boston MA, USA	Feb 2021
81. Invited Plenary Talk, Light Dark World 2020, Sydney, Australia	Dec 2020
80. Invited Plenary Talk, Identification of DM 2020, Vienna, Austria	Jul 2020
79. Invited Plenary Talk, 3rd World Summit on EDSU, Guadeloupe	Mar 2020
78. Invited Colloquium, MIT, LNS, Cambridge MA, USA	Feb 2020
77. Invited Plenary Talk, DM@LHC 2019, Seattle WA, USA	Aug 2019
76. Invited Colloquium, University of Melbourne, Melbourne Australia	Dec 2018
75. Invited Plenary Talk, CAASTRO-CoEPP Joint Workshop, Australia	Jan 2017

### **Invited Seminars and Other Conference Talks:**

74. Invited Seminar, University of Hawaii, Manoa HI, USA	May 2022
73. Invited Seminar, Stanford University, Stanford CA, USA	Apr 2022
72. Invited Seminar, Kings College London, London, UK	Mar 2022
71. Invited Seminar, University of Kentucky, Lexington KY, USA	Mar 2022
70. Invited Talk, Bay Area Theoretical Physics Seminar, San Francisco CA	Mar 2022

69. Invited Talk, FISICA 2022, Mainz, Germany	Mar 2022
68. Invited Seminar, Rutgers University, Piscataway NJ, USA	Dec 2021
67. Invited Seminar, Colgate University, Hamilton NY, USA	Nov 2021
66. Invited Parallel Talk, PANIC 2021, Lisbon, Portugal	Sep 2021
65. Invited Seminar, Max-Planck Institute, Heidelberg, Germany	Jul 2021
64. Invited Seminar, UCLA, Los Angeles CA, USA	Jun 2021
63. Invited Seminar, Imperial College London, London, UK	Apr 2021
62. Invited Seminar, University of Torino, Torino, Italy	Apr 2021
61. Invited Talk, Aspen Center for Physics Winter Conf., Aspen CO, USA	Mar 2021
60. Invited Seminar, University of Notre Dame, Notre Dame IN, USA	Mar 2021
59. Invited Seminar, Brookhaven National Laboratory, Upton NY, USA	Feb 2021
58. Invited Seminar, Queen's University, Kingston ON, Canada	Feb 2021
57. Invited Seminar, Stanford University, Stanford CA, USA	Dec 2020
56. Invited Seminar, California Institute of Technology, Pasadena CA, USA	Dec 2020
55. Invited Talk, 3rd South American DM Workshop, Brazil	Dec 2020
54. Invited Seminar, UC Santa Cruz, Santa Cruz CA, USA	Nov 2020
53. Invited Seminar, SLAC, Menlo Park CA, USA	Nov 2020
52. Invited Talk, Snowmass CF-01 Group Meeting	Aug 2020
51. Invited Seminar, Sydney CCPC, Sydney, Australia	Aug 2020
50. Invited Seminar, Kavli IPMU, Tokyo, Japan	May 2020
49. Parallel Talk, Pheno 2020, Pittsburgh PA, USA	May 2020
48. Invited Talk, Astrophysical Signatures of DM Workshop, MI, USA ( <i>canceled due to covid-19</i> )	May 2020
47. Invited Talk, Aspen Winter Conf. on Particle Physics, Aspen CO, USA ( <i>canceled due to covid-19</i> )	Mar 2020
46. Invited Seminar, U. Mass Amherst, Amherst MA, USA	Feb 2020
45. Invited Seminar, Tufts University, Medford MA, USA	Feb 2020
44. Invited Seminar, Boston University, Boston MA, USA	Nov 2019
43. Invited Seminar, SLAC, Menlo Park CA, USA	Oct 2019
42. Invited Seminar, Texas A&M University, College Station TX, USA	Oct 2019
41. Invited Seminar, MIT Center for Theoretical Physics, Camb. MA, USA	Sep 2019
40. Invited Seminar, Perimeter Institute, Waterloo ON, Canada	Jun 2019
39. Invited Talk, Aspen Center for Physics, Aspen CO, USA	Jun 2019
38. Invited Seminar, KICP, University of Chicago, Chicago IL, USA	Apr 2019
37. Invited Seminar, Brown University, Providence RI, USA	Apr 2019
36. Invited Seminar, Fermilab, Batavia IL, USA	Mar 2019

35. Invited Seminar, Brandeis University, Boston MA, USA	Mar 2019
34. Invited Seminar, Princeton University, Princeton NJ, USA	Feb 2019
33. Invited Talk, TRIUMF Dark Matter Workshop, Vancouver BC, Canada	Feb 2019
32. Parallel Talk, DESY Theory Workshop, Hamburg, Germany	Sep 2018
31. Invited Seminar, University of Melbourne, Melbourne VIC, Australia	Sep 2018
30. Parallel Talk 1, IDM 2018, Providence RI, USA	Jul 2018
29. Parallel Talk 2, IDM 2018, Providence RI, USA	Jul 2018
28. Invited Parallel Talk, PASCOS 2018, Cleveland OH, USA	Jun 2018
27. Parallel Talk, Pheno 2018 Symposium, Pittsburgh PA, USA	May 2018
26. Invited Seminar, California Institute of Technology, Pasadena CA, USA	Apr 2018
25. Invited Seminar, LBNL, Berkeley CA, USA	Apr 2018
24. Invited Seminar, University of Michigan, Ann Arbor MI, USA	Apr 2018
23. Invited Seminar, Dartmouth University, Hanover NH, USA	Apr 2018
22. Invited Seminar, University of Melbourne, Melbourne VIC, Australia	Jan 2018
21. Invited Seminar, MIT Center for Theoretical Physics, Camb. MA, USA	Sep 2017
20. PhD Completion Seminar, University of Melbourne, Australia	Mar 2017
19. Invited Talk, TRIUMF, Vancouver BC, Canada (remote)	Dec 2016
18. Invited Talk, ATLAS Astroparticle Forum Plenary Meeting, CERN	Nov 2016
17. Invited Talk, CETUP Dark Matter Workshop, Deadwood SD, USA	Jul 2016
16. Invited Seminar, University of Cincinnati, Cincinnati OH, USA	May 2016
15. Invited Seminar, CCAPP, Ohio State University, Columbus OH, USA	Jun 2016
14. Invited Seminar, UC Riverside, Riverside CA, USA	May 2016
13. Invited Seminar, UC Irvine, Irvine CA, USA	May 2016
12. Parallel Talk, Pheno 2016 Symposium, Pittsburgh PA, USA	May 2016
11. Invited Seminar, University of Melbourne, Melbourne VIC, Australia	Apr 2016
10. Invited Seminar, SLAC, Menlo Park CA, USA	Oct 2015
9. Invited Seminar, CCAPP, Ohio State University, Columbus OH, USA	Oct 2015
8. Invited Seminar, Fermilab, Batavia IL, USA	Sep 2015
7. Invited Seminar, Vanderbilt University, Nashville TN, USA	Sep 2015
6. Invited Seminar, University of Melbourne, Melbourne VIC, Australia	Aug 2015
5. Parallel Talk, SUSY 2015, Lake Tahoe CA, USA	Aug 2015
4. Invited Seminar, University of Melbourne, Melbourne VIC, Australia	May 2015
3. Parallel Talk, CoSPA2014, Auckland, New Zealand	Dec 2014
2. Contributed Talk, RESCEU APCosPA School, Matsumoto, Japan	Jul 2014
1. Invited Seminar, University of Cambridge, Cambridge, UK	Jun 2013



OUTREACH  
& PRESS

Video Interview (~ 8K views), <i>Universe Today</i> ,	2021
<a href="#">Interview with Dr. Rebecca K. Leane, Detecting Dark Matter</a>	
Interview, <i>SLAC News</i> ,	2021
<a href="#">How Exoplanets Could Aid the Search for Dark Matter</a>	
Interview, <i>Universe Today</i> ,	2021
<a href="#">Jupiter Could Make an Ideal Dark Matter Detector</a>	
Press Piece, <i>APS Physics</i> ,	2021
<a href="#">Detecting Dark Matter in Exoplanets</a>	
Interview, <i>Science Magazine</i> ,	2021
<a href="#">Dark Matter Could Warm the Hearts of Lonely Old Planets, Scientists Predict</a>	
Interview, <i>Wired Magazine</i> ,	2021
<a href="#">Where's the Dark Matter? Look for Suspiciously Warm Planets</a>	
Interview, <i>Quanta Magazine</i> ,	2020
<a href="#">Physicists are Expanding the Search for Dark Matter</a>	
Interview, <i>The Boston Globe Newspaper</i> ,	2019
<a href="#">MIT scientists find DM could be cause of mysterious energy at the center of our galaxy</a>	
Interview, <i>MIT News</i> ,	2019
<a href="#">Is there dark matter at the center of the Milky Way?</a>	
Press Piece, <i>APS Physics</i> ,	2019
<a href="#">New Hope for Milky-Way Dark Matter</a>	
Interview, <i>Gizmodo</i> ,	2019
<a href="#">The Future of Particle Physics Is Bright, Bleak, and Magical</a>	
Interview, <i>Quanta Magazine</i> ,	2019
<a href="#">Dark Matter Gets a Reprieve in New Analysis</a>	
Interview, <i>Kavli Foundation</i> ,	2019
<a href="#">Dark Matter is Back</a>	
Interview, <i>Science Magazine</i> ,	2019
<a href="#">Physicists Revive Hunt for Dark Matter in the Heart of the Milky Way</a>	
Interview, <i>Popular Mechanics</i> ,	2019
<a href="#">Filling the Void: What is Dark Matter?</a>	
Open House Talk, MIT Center for Theoretical Physics, Cambridge MA, USA	2018
Young Scientist Research Prize Talk, Royal Society of Victoria, Australia	2016
<a href="#">Key Scientific Researcher on International Science Documentary Series</a>	2014–2015
<i>“Uranium: Twisting the Dragon’s Tail”</i>	
Worked with Emmy Award winning producer Sonya Pemberton and writer Wain Fimeri part time in a paid role over 12 months. Had a major role in explaining science content and developing the script for the series. Aired in the United States, Australia, Germany, France, Middle East, Norway and Sweden. The series has been nominated for and won numerous science communication and film awards.	
Public Talk, Strathcona Girls’ School, Australia	2014
Panel Member, National Science Week: Kids Ask Questions, Australia	2013
Panel Member, National Science Week: Ask a Scientist, Australia	2013
Public Talk, Monash University Open Day Seminar Series, Australia	2011
<u>High impact papers on Altmetric (stats as of 06/14/21):</u>	
<ul style="list-style-type: none"> <li>• “Exoplanets as Sub-GeV Dark Matter Detectors” (2021) paper w/ Juri Smirnov: <a href="#">Altmetric Score of 435, ranked #49 of all time for media coverage of PRL outputs</a></li> <li>• “Dark Matter Strikes Back at the Galactic Center” (2019) paper w/ Tracy Slatyer: <a href="#">Altmetric Score of 327, ranked #91 of all time for media coverage of PRL outputs</a></li> </ul>	

TEACHING	Invited Lecturer, Dark Matter Theory Lectures, SLAC Summer Institute	2022
	Invited Lecturer, EXPLORE2021 Summer School Workshop	2021
	Guest Lecturer for MIT graduate level course <i>8.811: Particle Physics II</i>	2017
	Lecture Title: “Dark Matter Model Building”	
	ATLAS International Masterclass Tutor, U. Melbourne	2015
	Physics Teaching Assistant (Tutorials, Grading, Office Hours), U. Melbourne	2014
	Physics Teaching Assistant (Lab Demonstrator, Grading), U. Melbourne	2012
	Physics Teaching Assistant (Lab Demonstrator, Grading), Monash U.	2011
	High School Tutoring, Physics and Mathematics	2008–2010
MENTORING	<b>PhD Students:</b>	
	<i>Stanford Thesis Advising:</i>	
	Joshua Tong (Principal Advisor)	2022–
	<i>Other Mentoring:</i>	
	Joshua Tong, Stanford (Rotation Advisor)	Winter 2022
	Payel Mukhopadhyay, Stanford (→ Postdoc at Berkeley)	2020–2021
	<b>Undergraduate Students:</b>	
	Afura Taylor, MIT (→ PhD at Princeton)	2020–2021
STANFORD/SLAC SERVICE	Dark Matter Topical Lead for DOE HEP Institutional Review of SLAC	2022
	SLAC Particle Theory Graduate Open House Co-ordinator	2022
	Stanford Selection Committee for CAMPARE/Leadership Alliance Programs	2022
	Stanford Physics Graduate Admissions, Astrophysics Committee	2021–22
	Stanford Physics Recruitment Committee	2021–
	Stanford Physics, Identity, and Equity (PIE) Program Invited Speaker	2021
	Stanford Graduate Student Orientation: SLAC Theoretical Physics Overview Talk	2021
	SLAC Particle Theory Website Maintenance	2021–
	SLAC Dark Matter Meetings/Journal Club Founding Organizer	2021–
	Stanford Physics PhD Dissertation Committee Examiner:	
	• David Cyncynates (advisor: Savas Dimopolous)	2022
REVIEWING	Journal Referee for:	
	• Physical Review Journals	2019–
	• Reviews of Modern Physics	2019–
	• Journal of High Energy Physics (JHEP)	2021–
	• Journal of Cosmology and Astroparticle Physics (JCAP)	2021–
	• SciPost Physics	2020–

COMMUNITY	Coordinator, Editor, and Author	2021–2022
	Snowmass Cosmic Frontier CF01 White Paper: “Puzzling Excesses in Dark Matter Searches and How to Resolve Them”	
	Contributor to 6 Cosmic Frontier Snowmass White Papers (see publications)	2022
	Contributor to 1 Theory Frontier Snowmass White Paper (see publications)	2022
	Coordinator/Principal Author of Two Snowmass Letters of Interest	2020
	<a href="#">Understanding the Galactic Center Gamma-Ray Excess: Observational Prospects</a>	
	<a href="#">Understanding the Galactic Center Gamma-Ray Excess: Theory Prospects</a>	
	Submitted to Cosmic Frontier and Theory Frontier Snowmass Working Groups	
	Particle Theory Seminar Organizer, MIT Center for Theoretical Physics	2018–2020
	Convener, Dark Matter Session, TeV Particle Astrophysics (TeVPA) Conference	2019
REFERENCES	MIT Heising-Simons Physics Research Fellowship Peer Review Committee	2018
	<b>Prof. Tracy Slatyer</b> Center for Theoretical Physics Massachusetts Institute of Technology	
	<b>Prof. John Beacom</b> Center for Cosmology and AstroParticle Physics (CCAPP) Ohio State University	
	<b>Prof. Dan Hooper</b> Fermi National Accelerator Laboratory (Fermilab) & University of Chicago	
	<b>Prof. Nicole Bell</b> (Ph.D. Advisor) University of Melbourne	