


REBECCA K. LEANE



SLAC National Accelerator Laboratory
Stanford University
Menlo Park, CA 94025, USA


rleane@slac.stanford.edu
rebeccaleane.com

RESEARCH INTERESTS	Theoretical Particle and Astroparticle Physics, Physics Beyond the Standard Model <u>Expertise:</u> Indirect Dark Matter Detection, New Dark Matter and Astroparticle Search Strategies, Intersection of Particle Theory and Astrophysical Data for Dark Matter
CURRENT APPOINTMENTS	SLAC National Accelerator Laboratory, Stanford University <i>SLAC Particle Theory Group</i> Staff Scientist 2021–Present <i>Kavli Institute for Particle Astrophysics and Cosmology (KIPAC)</i> Senior Member 2021–Present
PREVIOUS APPOINTMENTS	SLAC National Accelerator Laboratory, Stanford University <i>SLAC Particle Theory Group</i> Postdoctoral Research Associate 2020–2021 Massachusetts Institute of Technology <i>MIT Center for Theoretical Physics</i> Postdoctoral Research Associate 2017–2020
EDUCATION	University of Melbourne 2013–2017 <i>Centre of Excellence for Particle Physics at the Terascale (CoEPP)</i> Ph.D. in Theoretical Particle Physics Thesis Advisor: Prof. Nicole Bell University of Cambridge 2012–2013 <i>Department of Applied Mathematics and Theoretical Physics (DAMTP)</i> 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

GRANTS AND AWARDS	Mottez Fellowship, Institut Henri Poincaré, Sorbonne University	2024
	KIPAC Innovation Grant, \$42,000 USD Leane and Macintosh	2022
	NASA Fermi Guest Investigator Program, Cycle 12, \$70,000 USD Leane and Slatyer	2019–2020
	Chancellor’s Prize for Excellence in the PhD Thesis, U. Melbourne	2018
	Dean’s Award for Excellence in Graduate Research, U. Melbourne	2018
	Royal Society of Victoria Young Scientist Research Prize	2016
	Science Abroad Travelling Scholarship, U. Melbourne	2016
	Laby Foundation Early Career Researcher Travel Scholarship	2015
	Australian Postgraduate Award (APA)	2012–2016
	Monash Jubilee Honours Scholarship, Monash U.	2011
J. L. William Honours Scholarship, Monash U.	2011	
HIGHLIGHTED PUBLICATIONS	<ul style="list-style-type: none"> ● R. K. Leane*, J. Beacom 2025 Sub-GeV Dark Matter Direct Detection with Neutrino Observatories Submitted to PRL, [arXiv:2503.09685 [hep-ph]] ● I. John, R. K. Leane and T. Linden 2024 Dark Branches of Immortal Stars at the Galactic Center Submitted to PRD, [arXiv:2405.12267 [astro-ph.HE]] ● C. Blanco and R. K. Leane 2023 Search for Dark Matter Ionization on the Night Side of Jupiter with Cassini Phys. Rev. Lett. 132, 261002 (2024), [arXiv:2312.06758 [hep-ph]] ● A. Das, N. Kurinsky, R. K. Leane 2022 Dark Matter Induced Power in Quantum Devices Phys. Rev. Lett. 132, 121801 (2024) [arXiv:2210.09313 [hep-ph]] ● R. K. Leane and T. Linden 2021 First Analysis of Jupiter in Gamma Rays and a New Search for Dark Matter Phys. Rev. Lett. 131, 071001 (2023), [arXiv:2104.02068 [astro-ph.HE]] ● R. K. Leane and J. Smirnov 2020 Exoplanets as Sub-GeV Dark Matter Detectors Phys. Rev. Lett. 126, 161101 (2021), [arXiv:2010.00015 [hep-ph]] ● D. Croon, G. Elor, R. K. Leane, S. McDermott 2020 Supernova Muons: New Constraints on Z' Bosons, Axions, and ALPs JHEP 01 (2021) 107, [arXiv:2006.13942 [hep-ph]] ● 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]] 	

Author lists are in alphabetical order (per convention in theoretical particle physics) unless marked with an asterisk. Underlined indicates a supervised student or a SLAC postdoc.

Journal Articles:

48. **R. K. Leane***, J. Beacom 2025
Sub-GeV Dark Matter Direct Detection with Neutrino Observatories
Submitted to PRL, [[arXiv:2503.09685](#) [hep-ph]]
[0 citations]
47. C. Blanco, M. Moore, **R. K. Leane** and J. Tong 2024
Search for Dark Matter Induced Airglow in Planetary Atmospheres
Submitted to PRL, [[arXiv:2408.15318](#) [hep-ph]]
[5 citations]
46. I. John, **R. K. Leane**, T. Linden 2024
Dark Branches of Immortal Stars at the Galactic Center
Submitted to PRD, [[arXiv:2405.12267](#) [astro-ph.HE]]
[10 citations]
45. M. Benito, K. Karchev, **R. K. Leane**, S. Podar, J. Smirnov, R. Trotta 2024
Dark Matter Halo Parameters from Overheated Exoplanets
via Bayesian Hierarchical Inference
JCAP 07 (2024) 038, [[arXiv:2405.09578](#) [astro-ph.IM]]
[3 citations]
44. **R. K. Leane** and J. Tong 2024
Optimal Celestial Bodies for Dark Matter Detection
JCAP 12 (2024) 031, [[arXiv:2405.05312](#) [hep-ph]]
[13 citations]
43. J. Acevedo, **R. K. Leane**, A. Reilly 2024
Detecting Dark Kinetic Heating in Exoplanets and Brown Dwarfs
Submitted to JHEP, [[arXiv:2405.02393](#) [hep-ph]]
[5 citations]
42. A. Das, N. Kurinsky, **R. K. Leane** 2024
Transmon Qubit Constraints on Dark Matter-Nucleon Scattering
JHEP 07 (2024) 233, [[arXiv:2405.00112](#) [hep-ph]]
[8 citations]
41. C. Blanco and **R. K. Leane** 2023
Search for Dark Matter Ionization on the Night Side of Jupiter with Cassini
Phys. Rev. Lett. 132, 261002 (2024), [[arXiv:2312.06758](#) [hep-ph]]
Selected as PRL Editor's Suggestion
[15 citations]

40. [I. John](#), **R. K. Leane**, T. Linden 2023
 Dark Matter Scattering Constraints from
 Observations of Stars Surrounding Sgr A*
 Phys. Rev. D 109, 123041 (2024), [arXiv:[2311.00015](#) [hep-ph]]
 [14 citations]
39. [J. Acevedo](#), **R. K. Leane**, [L. Santos-Olmsted](#) 2023
 Milky Way White Dwarfs as Sub-GeV to Multi-TeV Dark Matter Detectors
 JCAP 03 (2024) 042, [arXiv:[2309.10843](#) [hep-ph]]
 [22 citations]
38. **R. K. Leane** and J. Smirnov 2023
 Dark Matter Capture in Celestial Objects:
 Treatment Across Kinematic and Interaction Regimes
 JCAP 12 (2023) 040, [arXiv:[2309.00669](#) [hep-ph]]
 [23 citations]
37. [J. Acevedo](#), **R. K. Leane**, J. Smirnov 2023
 Evaporation Barrier for Dark Matter in Celestial Bodies
 JCAP 04 (2024) 038, [arXiv:[2303.01516](#) [hep-ph]]
 [26 citations]
36. [A. Das](#), N. Kurinsky, **R. K. Leane** 2022
 Dark Matter Induced Power in Quantum Devices
 Phys. Rev. Lett. 132, 121801 (2024), [arXiv:[2210.09313](#) [hep-ph]]
Selected as PRL Editor's Suggestion
 [27 citations]
35. **R. K. Leane** and J. Smirnov 2022
 Floating Dark Matter in Celestial Bodies
 JCAP 10 (2023) 057, [arXiv:[2209.09834](#) [hep-ph]]
 [40 citations]
34. [M. Collier](#), D. Croon, **R. K. Leane** 2022
 Tidal Love Numbers of Novel and Admixed Celestial Objects
 Phys. Rev. D 106, 123027 (2022), [arXiv:[2205.15337](#) [gr-qc]]
 [38 citations]
33. **R. K. Leane** and T. Linden 2021
 First Analysis of Jupiter in Gamma Rays and a New Search for Dark Matter
 Phys. Rev. Lett. 131, 071001 (2023), [arXiv:[2104.02068](#) [astro-ph.HE]]
 [58 citations]
32. **R. K. Leane**, T. Linden, P. Mukhopadhyay, N. Toro 2021
 Celestial-Body Focused Dark Matter Annihilation Throughout the Galaxy
 Phys. Rev. D 103, 075030 (2021), [arXiv:[2101.12213](#) [astro-ph.HE]]
 [76 citations]
31. **R. K. Leane** and J. Smirnov 2020
 Exoplanets as Sub-GeV Dark Matter Detectors
 Phys. Rev. Lett. 126, 161101 (2021), [arXiv:[2010.00015](#) [hep-ph]]
Selected as PRL Editor's Suggestion
 [90 citations]

30. D. Croon, G. Elor, **R. K. Leane**, S. McDermott 2020
 Supernova Muons: New Constraints on Z' Bosons, Axions, and ALPs
 JHEP 01 (2021) 107, [arXiv:2006.13942 [hep-ph]]
 [138 citations]
29. **R. K. Leane** and T. R. Slatyer 2020
 Spurious Point Source Signals in the Galactic Center Excess
 Phys. Rev. Lett. 125, 121105 (2020), [arXiv:2002.12370 [astro-ph.HE]]
 [65 citations]
28. **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]]
 [59 citations]
27. 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]]
 [34 citations]
26. 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]]
 [95 citations]
25. **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
 [135 citations]
24. 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]].
 [83 citations]
23. 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]]
 [43 citations]
22. **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]]
 [204 citations]

21. 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. D96 (2017), 023011 [arXiv:1705.01105 [hep-ph]]
 [40 citations]
20. **R. K. Leane***, K. C.Y. Ng, J. F. Beacom 2017
 Powerful Solar Signatures of Long-Lived Dark Mediators
 Phys. Rev. D95 (2017), 123016 [arXiv:1703.04629 [astro-ph.HE]]
 [114 citations]
19. 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]]
 [60 citations]
18. 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]]
 [47 citations]
17. 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]]
 [63 citations]
16. 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]]
 [85 citations]
15. 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]]
 [83 citations]

Review Articles:

14. **R. K. Leane** 2020
 Indirect Detection of Dark Matter in the Galaxy
 [arXiv:2006.00513 [hep-ph]]
 [66 citations]

Invited Viewpoint Articles:

13. Y. Hochberg, Y. Kahn, **R. K. Leane**, S. Rajendran,
 K. Van Tilburg, T-T. Yu, K. Zurek 2022
 New Approaches to Dark Matter Detection
 Nature Reviews Physics (2022).
 [17 citations]

White Papers and Working Group Reports:

12. J. Cooley, T. Lin, H. Lippincott, T. Slatyer, T. Yu et al (incl **R. K. Leane**) 2022
Report of the Topical Group on Particle Dark Matter for Snowmass 2021,
[arXiv:2209.07426 [hep-ph]]
Role: Report based in part on my Cosmic Frontier contributions.
[91 citations]
11. A. Drlica-Wagner, C. Prescod-Weinstein, H.-B. Yu et al (incl **R. K. Leane**) 2022
Report of the Topical Group on Cosmic Probes of Dark Matter for Snowmass 2021,
[arXiv:2209.08215 [hep-ph]]
Role: Report based in part on my Cosmic Frontier contributions.
[29 citations]
10. D. Green, J. Ruderman, B. Safdi, J. Shelton et al (incl **R. K. Leane**) 2022
Snowmass Theory Frontier: Astrophysics and Cosmology,
[arXiv:2209.06854 [hep-ph]]
Role: Report based in part on my Theory Frontier contributions.
[30 citations]
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.
[37 citations]
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.
[262 citations]
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 as-
trophysics, [arXiv:2203.06781 [hep-ph]]
Role: Contributor to “Searches with Celestial Bodies” section.
[9 citations]
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.
[72 citations]
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.
[74 citations]

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 γ -ray Dark Matter Signatures” section.
[69 citations]
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.
[23 citations]
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 text, content based in part on my solar dark matter search papers.
[36 citations]
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: Contributor to text; “DLHA: Dark Matter Les Houches Agreement”, is heavily based on my bachelor thesis.
[120 citations]

TALKS

Summary: 17 invited colloquia, 21 invited plenary talks, 66 invited seminars, 35 additional conference/workshop talks (incl. additional 28 invited). Invited talks across Australia, Austria, Brazil, Canada, Denmark, France, Germany, Guadeloupe, Italy, Japan, New Zealand, Portugal, Spain, Sweden, Switzerland, United Kingdom, and the US.

After PhD, average 20+ invited talks per year; declined invitations are not listed below. Almost all talk invitations were declined in 2024 due to pregnancy/birth of child.

Invited Plenary Talks and Colloquia:

116. Invited Plenary Talk, PPC2025, Deadwood SD, USA	Jun 2025
115. Invited Key Speaker, Dark Matter and Neutrinos 2025, Paris, France	May 2025
114. Invited Plenary Talk, APS April, Sacramento CA, USA	Apr 2024
113. Invited Colloquium, Texas A&M University, College Station TX, USA	Nov 2023
112. Invited Colloquium, University of Nevada, Las Vegas NV, USA	Sep 2023
111. Invited Plenary Talk, Pheno 2023, Pittsburgh PA, USA	May 2023
110. Invited Colloquium, University of Toronto, Toronto, Canada	Jan 2023
109. Invited Plenary Talk, TeVPA 2022, Kingston ON, Canada	Aug 2022
108. Invited Plenary Talk, Identification of DM 2022, Vienna, Austria	Jul 2022
107. Invited Colloquium, Snowmass Cosmic Frontier Meeting, Online	Jun 2022
106. Invited Overview Talk, HEP/Astro Results Forum, Online	May 2022
105. Invited Colloquium, Munich-Area Physics (TUM/LMU/MPI), Germany	May 2022
104. Invited Colloquium, SLAC, Menlo Park CA, USA	Feb 2022
103. Invited Colloquium, Carleton University, Ottawa, Canada	Dec 2021
102. Invited Colloquium, CERN, Geneva, Switzerland	Oct 2021
101. Invited Plenary Talk, Dark Matter 2021, Santander, Spain	Sep 2021
100. Invited Colloquium, North Carolina State U., Raleigh NC, USA	Sep 2021
99. Invited Plenary Talk, EXPLORE workshop, Germany	Aug 2021
98. Invited Plenary Talk, Planck 2021, Durham, UK	Jun 2021
97. Invited Colloquium, Stockholm University, Stockholm, Sweden	May 2021
96. Invited Colloquium, University of Chicago KICP, Chicago IL, USA	May 2021
95. Invited Colloquium, University at Albany SUNY, Albany NY, USA	Mar 2021
94. Invited Colloquium, Northeastern University, Boston MA, USA	Feb 2021
93. Invited Plenary Talk, Light Dark World 2020, Sydney, Australia	Dec 2020
92. Invited Plenary Talk, Identification of DM 2020, Vienna, Austria	Jul 2020
91. Invited Plenary Talk, 3rd World Summit on EDSU, Guadeloupe	Mar 2020
90. Invited Colloquium, MIT, LNS, Cambridge MA, USA	Feb 2020
89. Invited Plenary Talk, DM@LHC 2019, Seattle WA, USA	Aug 2019
88. Invited Colloquium, University of Melbourne, Melbourne Australia	Dec 2018
87. Invited Plenary Talk, CAASTRO-CoEPP Joint Workshop, Australia	Jan 2017
86. Invited Plenary Talk, ATLAS Astroparticle Forum Meeting, CERN	Nov 2016

Invited Seminars and Other Conference Talks:

85. Invited Talk, Search for New Physics Workshop, Salt Lake City UT, USA	Mar 2025
84. Invited Seminar, Perimeter Institute, Waterloo ON, Canada	Feb 2024
83. Invited Seminar, Latin-American Webinars in Physics, Online	Nov 2023
82. Invited Seminar, University of Oregon, Eugene OR, USA	Oct 2023
81. Invited Talk, Galactic Center Excess Workshop, Rutgers NY, USA	Jun 2023
80. Invited Talk, Future Gamma Telescope Workshop, Chicago IL, USA	May 2023
79. Invited Symposium Speaker, APS April Conference, Minnesota, USA	Apr 2023
78. Invited Talk, Aspen Winter Conference, Aspen CO, USA	Mar 2023
77. Invited Talk, Stony Brook Simons Workshop, Stony Brook NY, USA	Mar 2023
76. Invited Seminar, McGill University, Montreal, Québec, Canada	Nov 2022
75. Invited Seminar, Fermilab, Batavia IL, USA	Oct 2022
74. Invited Seminar, University of Utah, Salt Lake City UT, USA	Sep 2022
73. Invited Seminar, University of Hawaii, Manoa HI, USA	May 2022
72. Invited Seminar, Stanford University, Stanford CA, USA	Apr 2022
71. Invited Seminar, Kings College London, London, UK	Mar 2022
70. Invited Seminar, University of Kentucky, Lexington KY, USA	Mar 2022
69. Invited Talk, Bay Area Theoretical Physics Seminar, San Francisco CA	Mar 2022
68. Invited Talk, FISICA 2022, Mainz, Germany	Mar 2022
67. Invited Seminar, Rutgers University, Piscataway NJ, USA	Dec 2021
66. Invited Seminar, Colgate University, Hamilton NY, USA	Nov 2021
65. Invited Parallel Talk, PANIC 2021, Lisbon, Portugal	Sep 2021
64. Invited Seminar, Max-Planck Institute, Heidelberg, Germany	Jul 2021
63. Invited Seminar, UCLA, Los Angeles CA, USA	Jun 2021
62. Invited Seminar, Imperial College London, London, UK	Apr 2021
61. Invited Seminar, University of Torino, Torino, Italy	Apr 2021
60. Invited Talk, Aspen Center for Physics Winter Conf., Aspen CO, USA	Mar 2021
59. Invited Seminar, University of Notre Dame, Notre Dame IN, USA	Mar 2021
58. Invited Seminar, Brookhaven National Laboratory, Upton NY, USA	Feb 2021
57. Invited Seminar, Queen's University, Kingston ON, Canada	Feb 2021
56. Invited Seminar, Stanford University, Stanford CA, USA	Dec 2020
55. Invited Seminar, California Institute of Technology, Pasadena CA, USA	Dec 2020
54. Invited Talk, 3rd South American DM Workshop, Brazil	Dec 2020
53. Invited Seminar, UC Santa Cruz, Santa Cruz CA, USA	Nov 2020
52. Invited Seminar, SLAC, Menlo Park CA, USA	Nov 2020
51. Invited Talk, Snowmass CF-01 Group Meeting	Aug 2020

50. Invited Seminar, Sydney CCPC, Sydney, Australia Aug 2020
49. Invited Seminar, Kavli IPMU, Tokyo, Japan May 2020
48. Parallel Talk, Pheno 2020, Pittsburgh PA, USA May 2020
47. Invited Talk, Astrophysical Signatures of DM Workshop, MI, USA May 2020
(*canceled due to covid-19*)
46. Invited Talk, Aspen Winter Conf. on Particle Physics, Aspen CO, USA Mar 2020
(*canceled due to covid-19*)
45. Invited Seminar, U. Mass Amherst, Amherst MA, USA Feb 2020
44. Invited Seminar, Tufts University, Medford MA, USA Feb 2020
43. Invited Seminar, Boston University, Boston MA, USA Nov 2019
42. Invited Seminar, SLAC, Menlo Park CA, USA Oct 2019
41. Invited Seminar, Texas A&M University, College Station TX, USA Oct 2019
40. Invited Seminar, MIT Center for Theoretical Physics, Camb. MA, USA Sep 2019
39. Invited Seminar, Perimeter Institute, Waterloo ON, Canada Jun 2019
38. Invited Talk, Aspen Center for Physics, Aspen CO, USA Jun 2019
37. Invited Seminar, KICP, University of Chicago, Chicago IL, USA Apr 2019
36. Invited Seminar, Brown University, Providence RI, USA Apr 2019
35. Invited Seminar, Fermilab, Batavia IL, USA Mar 2019
34. Invited Seminar, Brandeis University, Boston MA, USA Mar 2019
33. Invited Seminar, Princeton University, Princeton NJ, USA Feb 2019
32. Invited Talk, TRIUMF Dark Matter Workshop, Vancouver BC, Canada Feb 2019
31. Parallel Talk, DESY Theory Workshop, Hamburg, Germany Sep 2018
30. Invited Seminar, University of Melbourne, Melbourne VIC, Australia Sep 2018
29. Parallel Talk 1, IDM 2018, Providence RI, USA Jul 2018
28. Parallel Talk 2, IDM 2018, Providence RI, USA Jul 2018
27. Invited Parallel Talk, PASCOS 2018, Cleveland OH, USA Jun 2018
26. Parallel Talk, Pheno 2018 Symposium, Pittsburgh PA, USA May 2018
25. Invited Seminar, California Institute of Technology, Pasadena CA, USA Apr 2018
24. Invited Seminar, LBNL, Berkeley CA, USA Apr 2018
23. Invited Seminar, University of Michigan, Ann Arbor MI, USA Apr 2018
22. Invited Seminar, Dartmouth University, Hanover NH, USA Apr 2018
21. Invited Seminar, University of Melbourne, Melbourne VIC, Australia Jan 2018
20. Invited Seminar, MIT Center for Theoretical Physics, Camb. MA, USA Sep 2017
19. PhD Completion Seminar, University of Melbourne, Australia Mar 2017
18. Invited Seminar, TRIUMF, Vancouver BC, Canada (remote) Dec 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

MENTORING & SUPERVISING	SLAC Postdoctoral Researchers:		
	Linda Xu	2024–	
	Javier Acevedo	2022–	
	Anirban Das (→ Faculty at Saha Institute)	2021–2022	
	PhD Students:		
	<i>Stanford Thesis Advisor:</i>		
	Lillian Santos-Olmsted	2023–	
	Joshua Tong	2022–	
	<i>Supervising other Stanford PhD student projects:</i>		
	Aidan Reilly	2023–	
	Payel Mukhopadhyay (→ Postdoc at Berkeley)	2020–2021	
	<i>Supervising external PhD student projects:</i>		
	Marianne Moore, MIT	2024–	
	Isabelle John, Stockholm University (→ Postdoc at U. Turin)	2023–2024	
	Michael Collier, Durham University	2022	
Javier Acevedo, Queens University (→ Postdoc at SLAC)	2019		
Undergraduate Students:			
Iz Paylor, Stanford	Summer 2022		
Afura Taylor, MIT (→ PhD at Princeton)	2020–2021		
STANFORD/SLAC SERVICE	Stanford Physics, Identity, and Equity Program Invited Speaker	2021, 2022, 2023, 2024	
	SLAC Linac Coherent Light Source (LCLS) Proposal Reviewer	2024–	
	SLAC Panofsky Fellowship Search Committee	2022–23	
	Stanford Physics Graduate Admissions, Astrophysics Committee	2022–23	
	Dark Matter Topical Lead for DOE HEP Institutional Review of SLAC	2022	
	SLAC Particle Theory Graduate Spring Open House Co-ordinator	2022–24	
	Stanford Selection Committee for CAMPARE/Leadership Alliance Programs	2022	
	Stanford Physics Graduate Admissions, Astrophysics Committee	2021–22	
	Stanford Physics Recruitment Committee	2021–22	
	Stanford Graduate Student Orientation: SLAC Theoretical Physics Overview Talk	2021	
	SLAC Particle Theory Postdoc Selection Committee	2021–	
	SLAC Particle Theory Website Maintenance	2021–22	
	SLAC Dark Matter Meetings/Journal Club Founding Organizer	2021–	
	Stanford Physics PhD Thesis Committee / PhD Defense Examiner:		
	• Samuel Wong (advisor: Peter Graham)	2023–2025	
	• David Cyncynates (advisor: Savas Dimopoulos)	2022	
	TEACHING	Invited Lecturer, Dark Matter Searches, Pre-SUSY Summer School	2025
		Invited Lecturer, Dark Matter in Astrophysics Lectures, N3AS Summer School	2024
		Invited Lecturer, Dark Matter Theory Lectures, SLAC Summer Institute	2022
		Invited Lecturer, EXPLORE2021 Summer School Workshop	2021
Guest Lecturer for MIT graduate course 8.811: Particle Physics II		2017	
ATLAS International Masterclass Tutor, U. Melbourne		2015	
Physics Teaching Assistant, U. Melbourne, Monash U.		2011–2015	

EXTERNAL REVIEWING	<p>Institution Reviewing:</p> <ul style="list-style-type: none"> • US Department of Energy (DOE) University Comparative Review Theory Frontier, Energy Frontier <p>Grant Reviewing:</p> <ul style="list-style-type: none"> • NASA Hubble Fellowship Selection Panel, Physics & Cosmology • US Department of Energy (DOE) • Natural Sciences and Engineering Research Council of Canada (NSERC) • MIT Heising-Simons Physics Research Fellowship Review Panel <p>Journal Referee:</p> <ul style="list-style-type: none"> • Physical Review Journals (PRL, PRD) • Journal of High Energy Physics (JHEP) • Journal of Cosmology and Astroparticle Physics (JCAP) • Physics Letters B (PLB) • SciPost Physics 	Multiple years
COMMUNITY	<p>Invited Viewpoint Article Contributor in Nature Physics Reviews, “New Approaches to Dark Matter Detection” (see publications)</p> <p>Invited Coordinator, Editor, and Author Snowmass Cosmic Frontier CF01 White Paper: “Puzzling Excesses in Dark Matter Searches and How to Resolve Them”</p> <p>Contributor to 6 Cosmic Frontier Snowmass White Papers (see publications)</p> <p>Contributor to 1 Theory Frontier Snowmass White Paper (see publications)</p> <p>Coordinator/Principal Author of Two Snowmass Letters of Interest</p> <p>Understanding the Galactic Center Gamma-Ray Excess: Observational Prospects Understanding the Galactic Center Gamma-Ray Excess: Theory Prospects Submitted to Cosmic Frontier and Theory Frontier Snowmass Working Groups</p> <p>Co-organizer/convener, Galactic Center Excess Workshop, Rutgers</p> <p>Convener/Chair, Plenary Session, TeV Particle Astrophysics (TeVPA) Conference</p> <p>SLAC Dark Matter Meetings/Journal Club Founding Organizer</p> <p>Particle Theory Seminar Organizer, MIT Center for Theoretical Physics</p> <p>Convener, Dark Matter Session, TeV Particle Astrophysics (TeVPA) Conference</p>	<p>2022</p> <p>2021–2022</p> <p>2022</p> <p>2022</p> <p>2020</p> <p></p> <p>2023</p> <p>2022</p> <p>2021–</p> <p>2018–2020</p> <p>2019</p>
PUBLIC TALKS & PANELS	<p>Public Lecture, Stanford University, Stanford CA, USA</p> <p>Young Scientist Research Prize Talk, Royal Society of Victoria, Australia</p> <p>Public Talk, Strathcona Girls’ School, Australia</p> <p>Panel Member, National Science Week: Kids Ask Questions, Australia</p> <p>Panel Member, National Science Week: Ask a Scientist, Australia</p> <p>Public Talk, Monash University Open Day Seminar Series, Australia</p>	<p>2023</p> <p>2016</p> <p>2014</p> <p>2013</p> <p>2013</p> <p>2011</p>

PRESS	Interview, <i>SLAC News</i> ,	2023
INTERVIEWS	Scientists propose a new way to search for dark matter	
& ARTICLES	Interview, <i>New Scientist</i> ,	2022
	Earth's Surface May Be Teeming with Trillions of Dark Matter Particles	
	Video Interview (~ 10,000 views), <i>Universe Today</i> ,	2021
	Interview with Dr. Rebecca K. Leane, Detecting Dark Matter	
	Interview, <i>SLAC News</i> ,	2021
	How Exoplanets Could Aid the Search for Dark Matter	
	Interview, <i>Universe Today</i> ,	2021
	Jupiter Could Make an Ideal Dark Matter Detector	
	Press Piece, <i>APS Physics</i> ,	2021
	Detecting Dark Matter in Exoplanets	
	Interview, <i>Science Magazine</i> ,	2021
	Dark Matter Could Warm the Hearts of Lonely Old Planets, Scientists Predict	
	Interview, <i>Wired Magazine</i> ,	2021
	Where's the Dark Matter? Look for Suspiciously Warm Planets	
	Interview, <i>Quanta Magazine</i> ,	2020
	Physicists are Expanding the Search for Dark Matter	
	Interview, <i>The Boston Globe Newspaper</i> ,	2019
	MIT scientists find DM could be cause of mysterious energy at the center of our galaxy	
	Interview, <i>MIT News</i> ,	2019
	Is there dark matter at the center of the Milky Way?	
	Press Piece, <i>APS Physics</i> ,	2019
	New Hope for Milky-Way Dark Matter	
	Interview, <i>Gizmodo</i> ,	2019
	The Future of Particle Physics Is Bright, Bleak, and Magical	
	Interview, <i>Quanta Magazine</i> ,	2019
	Dark Matter Gets a Reprieve in New Analysis	
	Interview, <i>Kavli Foundation</i> ,	2019
	Dark Matter is Back	
	Interview, <i>Science Magazine</i> ,	2019
	Physicists Revive Hunt for Dark Matter in the Heart of the Milky Way	
	Interview, <i>Popular Mechanics</i> ,	2019
	Filling the Void: What is Dark Matter?	

High impact papers on Altmetric (stats as of 06/14/21):

- "Exoplanets as Sub-GeV Dark Matter Detectors" (2021) paper w/ Juri Smirnov:
Altmetric Score of 435, ranked #49 of all time for media coverage of PRL outputs
- "Dark Matter Strikes Back at the Galactic Center" (2019) paper w/ Tracy Slatyer:
Altmetric Score of 327, ranked #91 of all time for media coverage of PRL outputs

FILM WRITING	Key Scientific Researcher on International Science Documentary Series	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 explaining the science content and developing the script for the series. Aired worldwide (on PBS in the US) and won numerous science communication and film awards	