

# REBECCA K. LEANE



SLAC National Accelerator Laboratory  
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## RESEARCH INTERESTS

Theoretical Particle and Astroparticle Physics, Physics Beyond the Standard Model  
Expertise: Indirect Dark Matter Detection, New Dark Matter and Astroparticle Search  
Strategies, Intersection of Theory and Astrophysical Data for Dark Matter

## CURRENT APPOINTMENTS

### **SLAC National Accelerator Laboratory, Stanford University**

*SLAC Particle Theory Group*

Staff Scientist (Tenured)

2024–Present

*Kavli Institute for Particle Astrophysics and Cosmology (KIPAC)*

Senior Member

2021–Present

## PREVIOUS APPOINTMENTS

### **SLAC National Accelerator Laboratory, Stanford University**

*SLAC Particle Theory Group*

Associate Staff Scientist (Tenure Track)

2021–2024

Postdoctoral Research Associate

2020–2021

### **Massachusetts Institute of Technology**

*MIT Center for Theoretical Physics*

Postdoctoral Research Associate

2017–2020

## 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	KIPAC Innovation Grant, \$42,000 USD <i>Detecting Dark Matter in Exoplanets</i> <b>Leane</b> and Macintosh	2022
	NASA Fermi Guest Investigator Program, Cycle 12, \$70,000 USD <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	2018
	Dean’s Award for Excellence in Graduate Research, U. Melbourne	2018
	Australian Government Research Training Program Scholarship	2017
	Royal Society of Victoria Young Scientist Research Prize	2016
	Science Abroad Travelling Scholarship	2016
	Laby Foundation Early Career Researcher Travel Scholarship	2015
	Australian Postgraduate Award (APA)	2012–2016
	Monash Jubilee Honours Scholarship	2011
	J. L. William Honours Scholarship	2011
HIGHLIGHTED PUBLICATIONS	<ul style="list-style-type: none"> <li>• C. Blanco and <b>R. K. Leane</b> Search for Dark Matter Ionization on the Night Side of Jupiter with Cassini Submitted to PRL, [arXiv:<a href="#">2312.06758</a> [hep-ph]]</li> </ul>	2023
	<ul style="list-style-type: none"> <li>• A. Das, N. Kurinsky, <b>R. K. Leane</b> Dark Matter Induced Power in Quantum Devices Phys. Rev. Lett. 132, 121801 (2024) [arXiv:<a href="#">2210.09313</a> [hep-ph]]</li> </ul>	2022
	<ul style="list-style-type: none"> <li>• <b>R. K. Leane</b> and J. Smirnov Floating Dark Matter in Celestial Bodies JCAP 10 (2023) 057, [arXiv:<a href="#">2209.09834</a> [hep-ph]]</li> </ul>	2022
	<ul style="list-style-type: none"> <li>• <b>R. K. Leane</b> and T. Linden First Analysis of Jupiter in Gamma Rays and a New Search for Dark Matter Phys. Rev. Lett. 131, 071001 (2023), [arXiv:<a href="#">2104.02068</a> [astro-ph.HE]]</li> </ul>	2021
	<ul style="list-style-type: none"> <li>• <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]]</li> </ul>	2020
	<ul style="list-style-type: none"> <li>• D. Croon, G. Elor, <b>R. K. Leane</b>, S. McDermott Supernova Muons: New Constraints on <math>Z'</math> Bosons, Axions, and ALPs JHEP 01 (2021) 107, [arXiv:<a href="#">2006.13942</a> [hep-ph]]</li> </ul>	2020
	<ul style="list-style-type: none"> <li>• <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]]</li> </ul>	2020
	<ul style="list-style-type: none"> <li>• <b>R. K. Leane</b> and T. R. Slatyer Dark Matter Strikes Back at the Galactic Center Phys. Rev. Lett. 123 (2019) 241101, [arXiv:<a href="#">1904.08430</a> [astro-ph.HE]]</li> </ul>	2019
	<ul style="list-style-type: none"> <li>• <b>R. K. Leane</b>*, T. R. Slatyer, J. F. Beacom, K. C.Y. Ng GeV-Scale Thermal WIMPs: Not Even Slightly Dead Phys. Rev. D98 (2018), 023016 [arXiv:<a href="#">1805.10305</a> [hep-ph]]</li> </ul>	2018
	<ul style="list-style-type: none"> <li>• <b>R. K. Leane</b>*, K. C.Y. Ng, J. F. Beacom Powerful Solar Signatures of Long-Lived Dark Mediators Phys. Rev. D95 (2017), 123016 [arXiv:<a href="#">1703.04629</a> [astro-ph.HE]]</li> </ul>	2017

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

Journal Articles:

44. **R. K. Leane** and J. Tong 2024  
Optimal Celestial Bodies for Dark Matter Detection  
To be submitted, [arXiv:[2405.05312](#) [hep-ph]]  
[0 citations]
43. J. Acevedo, **R. K. Leane**, A. Reilly 2024  
Detecting Dark Kinetic Heating in Exoplanets and Brown Dwarfs  
To be submitted, [arXiv:[2405.02393](#) [hep-ph]]  
[1 citations]
42. A. Das, N. Kurinsky, **R. K. Leane** 2024  
Transmon Qubit Constraints on Dark Matter-Nucleon Scattering  
Submitted to JHEP, [arXiv:[2405.00112](#) [hep-ph]]  
[1 citations]
41. C. Blanco and **R. K. Leane** 2023  
Search for Dark Matter Ionization on the Night Side of Jupiter with Cassini  
Submitted to PRL, [arXiv:[2312.06758](#) [hep-ph]]  
[3 citations]
40. I. John, **R. K. Leane**, T. Linden 2023  
Dark Matter Scattering Constraints from  
Observations of Stars Surrounding Sgr A\*  
Submitted to PRD, [arXiv:[2311.00015](#) [hep-ph]]  
[8 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]]  
[11 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]]  
[11 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]]  
[19 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*  
[17 citations]
35. **R. K. Leane** and J. Smirnov 2022  
Floating Dark Matter in Celestial Bodies  
JCAP 10 (2023) 057, [arXiv:[2209.09834](#) [hep-ph]]  
[31 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]]  
[22 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]]  
[44 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]]  
[59 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, Featured in APS Physics*  
[73 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]]  
[111 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]]  
[55 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]]  
[51 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]]  
[33 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]]  
 [79 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, Featured in APS Physics*  
 [119 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]].  
 [73 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]]  
 [38 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]]  
 [171 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. D 96 (2017), 023011 [arXiv:[1705.01105](#) [hep-ph]]  
 [37 citations]
20. **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]]  
 [99 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]]  
 [57 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]]  
 [44 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]]  
 [60 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. D 92, 053008 (2015) [arXiv:[1503.07874](#) [hep-ph]]  
[82 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]]  
[80 citations]

#### Review Articles:

14. **R. K. Leane** 2020  
Indirect Detection of Dark Matter in the Galaxy  
[arXiv:[2006.00513](#) [hep-ph]]  
[48 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).  
[11 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.*  
[59 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.*  
[19 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.*  
[19 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.*  
[24 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.*  
[151 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 astrophysics, [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.*  
[54 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.*  
[52 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  $\gamma$ -ray Dark Matter Signatures” section.*  
[54 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.*  
[20 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.*  
[33 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.*  
[118 citations]



## TALKS

Summary: 17 invited colloquia, 16 invited plenary talks, 65 invited seminars, 32 additional conference/workshop talks (incl. additional 25 invited). Invited talks across Australia, Austria, Brazil, Canada, Denmark, France, Germany, Guadeloupe, Italy, Japan, New Zealand, Portugal, Spain, Sweden, Switzerland, United Kingdom, and the United States.

After PhD, average 20+ invited talks per year; declined invitations are not listed below.

### Invited Plenary Talks and Colloquia:

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

### Invited Seminars and Other Conference Talks:

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 ( <i>canceled due to covid-19</i> )	May 2020
46. Invited Talk, Aspen Winter Conf. on Particle Physics, Aspen CO, USA ( <i>canceled due to covid-19</i> )	Mar 2020
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

PRESS INTERVIEWS & ARTICLES	Interview, <i>SLAC News</i> ,	2023
	<a href="#">Scientists propose a new way to search for dark matter</a>	
	Interview, <i>New Scientist</i> ,	2022
	<a href="#">Earth's Surface May Be Teeming with Trillions of Dark Matter Particles</a>	
	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
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

PUBLIC TALKS & PANELS	Public Lecture, Stanford University, Stanford CA, USA	2023
	Young Scientist Research Prize Talk, Royal Society of Victoria, Australia	2016
	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

FILM WRITING	<p><a href="#">Key Scientific Researcher on International Science Documentary Series</a>      2014–2015</p> <p><i>“Uranium: Twisting the Dragon’s Tail”</i></p> <p>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</p>
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MENTORING & SUPERVISING	<b>SLAC Postdoctoral Researchers:</b>	
	Javier Acevedo	2022–
	Anirban Das	2022
	<b>PhD Students:</b>	
	<i>Stanford Thesis Advisor:</i>	
	Lillian Santos-Olmsted	2023–
	Joshua Tong	2022–
	<i>Advising or co-advising projects for other PhD students:</i>	
	Marianne Moore, MIT	2024–
	Aidan Reilly, Stanford	2023–
	Isabelle John, Stockholm University (→ Postdoc at U. Torino)	2023–
	Payel Mukhopadhyay, Stanford (→ Postdoc at Berkeley)	2020–2021
	Javier Acevedo, Queens University (→ Postdoc at SLAC)	2019
	<b>Undergraduate Students:</b>	
	Iz Paylor, Stanford	Summer 2022
	Afura Taylor, MIT (→ PhD at Princeton)	2020–2021
STANFORD/SLAC SERVICE	Stanford Physics, Identity, and Equity (PIE) Program Invited Speaker	2023
	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
	Stanford Physics, Identity, and Equity (PIE) Program Invited Speaker	2022
	SLAC Particle Theory Graduate Spring Open House Co-ordinator	2022–23
	Stanford Selection Committee for CAMPARE/Leadership Alliance Programs	2022
	Stanford Physics Graduate Admissions, Astrophysics Committee	2021–22
	Stanford Physics Recruitment Committee	2021–22
	Stanford Physics, Identity, and Equity (PIE) Program Invited Speaker	2021
	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–
	• David Cyncynates (advisor: Savas Dimopoulos)	2022
TEACHING	Invited Lecturer, Dark Matter Theory Lectures, SLAC Summer Institute	2022
	Invited Lecturer, EXPLORE2021 Summer School Workshop	2021
	Guest Lecturer for MIT graduate 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

REVIEWING	Institution Reviewing:	
	• US Department of Energy (DOE) University Comparative Review, Mail-in reviewer (Theory Frontier)	2024
	• US Department of Energy (DOE) University Comparative Review Panel (Energy Frontier)	2023
	Grant Reviewing:	
	• NASA Hubble Fellowship Selection Panel, Physics & Cosmology	2023–24
	• US Department of Energy (DOE)	2023–
	• Natural Sciences and Engineering Research Council of Canada (NSERC)	2022–
	• MIT Heising-Simons Physics Research Fellowship Review Panel	2018
	Journal Referee:	
	• Physical Review Journals (PRL, PRD)	2019–
COMMUNITY	• Journal of High Energy Physics (JHEP)	2021–
	• Journal of Cosmology and Astroparticle Physics (JCAP)	2021–
	• SciPost Physics	2020–
	Invited Viewpoint Article Contributor in Nature Physics Reviews, “New Approaches to Dark Matter Detection” (see publications)	2022
	Invited 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	
	Co-organizer/convener, Galactic Center Excess Workshop, Rutgers	2023
	Convener/Chair, Plenary Session, TeV Particle Astrophysics (TeVPA) Conference	2022
	SLAC Dark Matter Meetings/Journal Club Founding Organizer	2021–
	Particle Theory Seminar Organizer, MIT Center for Theoretical Physics	2018–2020
	Convener, Dark Matter Session, TeV Particle Astrophysics (TeVPA) Conference	2019