Nicholas L. Rodd

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Positions

University of California, Berkeley 2018-present
Miller Research Fellow

Education

Massachusetts Institute of Technology 2013-2018
Ph.D. Physics
Advisor: Tracy Slatyer
Thesis: Listening to the Universe through Indirect Detection

Melbourne University 2011-2012
M.Sc. (Distinction) Physics
Advisor: Raymond Volkas and Elisabetta Barberio
Thesis: Analysis of neutrino mass effective operators and testing their signatures at the Large Hadron Collider

Melbourne University 2006-2010
B.Sc. & LL.B. (Hons)

Selected Awards

APS DAP Cecilia Payne-Gaposchkin Thesis Award	2020
J. J. and Noriko Sakurai Dissertation Award in Theoretical Particle Physics	2019
Miller Research Fellowship	2018
Price Prize in Cosmology and AstroParticle Physics	2017
Andrew M. Lockett III Memorial Fund Award, MIT	2016
Acevedo Fellowship, MIT	2015
Kerman Fellowship, MIT	2013
Fulbright Postgraduate Scholarship (declined)	2013
Henry James Williams Scholarship, Melbourne University	2012
Bryan Scholarship in Natural Science, Melbourne University	2011
Raynes Dickson Memorial Exhibition in Deals, Melbourne University	2010
Australian Students Prize	2005

References

Tracy Slatyer Massachusetts Institute of Technology	tslatyer@mit.edu
Benjamin Safdi University of Michigan	bsafdi@umich.edu
Christian Bauer Lawrence Berkeley National Laboratory	cwbauer@lbl.gov
Iain Stewart Massachusetts Institute of Technology	iains@mit.edu
Christoph Weniger University of Amsterdam	c.weniger@uva.nl
Marco Cirelli Laboratoire de Physique Théorique et Hautes Énergies	marco.cirelli@lpthe.jussieu.fr

Publications

35. L. Rinchiuso, O. Macias, E. Moulin, N. L. Rodd, T. R. Slatyer — arXiv:2008.00692
Prospects for Heavy WIMP Dark Matter with CTA: the Wino and Higgsino

34. C. W. Bauer, N. L. Rodd, B. R. Webber — arXiv:2007.15001
Dark Matter Spectra from the Electroweak to the Planck Scale

33. I. Baldes, F. Calore, K. Petraki, V. Poireau, N. L. Rodd — arXiv:2007.13787
Indirect searches for dark matter bound state formation and level transitions

32. F. List, N. L. Rodd, G. F. Lewis, and I. Bhat — arXiv:2006.12504
The GCE in a New Light: Disentangling the γ-ray Sky with Bayesian Graph Convolutional Neural Networks

31. C. Dessert, N. L. Rodd, B. R. Safdi — Phys.Dark Univ. **30** (2020) 100656, arXiv:2006.03974
Response to a comment on Dessert et al. "The dark matter interpretation of the 3.5 keV line is inconsistent with blank-sky observations"

30. G. N. Remmen, N. L. Rodd — arXiv:2004.02885
Flavor Constraints from Unitarity and Analyticity

29. M. Buschmann, N. L. Rodd, B. R. Safdi, L. J. Chang, S. Mishra-Sharma, M. Lisanti, O. Macias
Foreground Mismodeling and the Point Source Explanation of the Fermi Galactic Center Excess
Phys.Rev. **D102** (2020) 023023 arXiv:2002.12373

28. IceCube Collaboration
A Search for Neutrino Point-Source Populations in 7 Years of IceCube Data with Neutrino-count Statistics
Astrophys.J. **893** (2020) 102 arXiv:1909.08623

27. L. J. Chang, S. Mishra-Sharma, M. Lisanti, M. Buschmann, N. L. Rodd, B. R. Safdi
Characterizing the Nature of the Unresolved Point Sources in the Galactic Center
Phys.Rev. **D101** (2020) 023014 arXiv:1908.10874

26. G. N. Remmen, N. L. Rodd
Consistency of the Standard Model Effective Field Theory
JHEP **1912** (2019) 032 arXiv:1908.09845

25. The ABRACADABRA Collaboration
Design and Implementation of the ABRACADABRA-10 cm Axion Dark Matter Search
Phys.Rev. **D99** (2019) 052012 arXiv:1901.10652

24. C. Dessert, N. L. Rodd, B. R. Safdi
The dark matter interpretation of the 3.5-keV line is inconsistent with blank-sky observations
Science 367 (2020) 6485 arXiv:1812.06976

23. The ABRACADABRA Collaboration
First Results from ABRACADABRA-10 cm: A Search for Sub-μeV Axion Dark Matter
Phys.Rev.Lett. **122** (2018) 121802 arXiv:1810.12257

22. M. Baumgart, T. Cohen, E. Moulin, I. Moult, L. Rinchiuso, N. L. Rodd, T. R. Slatyer, I. W. Stewart, V. Vaidya
Precision Photon Spectra for Wino Annihilation
JHEP **1901** (2019) 036 arXiv:1808.08956

21. L. Rinchiuso, N. L. Rodd, I. Moult, E. Moulin, M. Baumgart, T. Cohen, T. R. Slatyer, I. W. Stewart, V. Vaidya
Hunting for Heavy Winos in the Galactic Center
Phys.Rev. **D98** (2018) 123014 arXiv:1808.04388

20. M. Baumgart, T. Cohen, I. Moult, N. L. Rodd, T. R. Slatyer, M. P. Solon, I. W. Stewart, V. Vaidya
Resummed Photon Spectra for WIMP Annihilation
JHEP **1803** (2018) 117 arXiv:1712.07656

19. J. W. Foster, N. L. Rodd, B. R. Safdi
Revealing the Dark Matter Halo with Axion Direct Detection
Phys.Rev. **D97** (2018) 123006 arXiv:1711.10489

18. The HAWC Collaboration
A Search for Dark Matter in the Galactic Halo with HAWC
JCAP **1802** (2018) 049 arXiv:1710.10288

17. R. Bartels, D. Hooper, T. Linden, S. Mishra-Sharma, N. L. Rodd, B. R. Safdi, T. R. Slatyer
Comment on "Characterizing the population of pulsars in the Galactic bulge with the Fermi Large Area Telescope" [arXiv:1705.00009v1]
Phys.Dark Univ. **20** (2016) 88 arXiv:1710.10266

16. R. E Keeley, S. N. Abazajian, A. Kwa, N. L. Rodd, B. R. Safdi
What the Milky Way's Dwarfs tell us about the Galactic Center extended excess
Phys.Rev. **D97** (2018) 103007 arXiv:1710.03215

15. M. Lisanti, S. Mishra-Sharma, N. L. Rodd, B. R. Safdi, R. H. Wechsler
Mapping Extragalactic Dark Matter Annihilation with Galaxy Surveys: A Systematic Study of Stacked Group Searches
Phys.Rev. **D97** (2018) 063005 arXiv:1709.00416

14. M. Lisanti, S. Mishra-Sharma, N. L. Rodd, B. R. Safdi
A Search for Dark Matter Annihilation in Galaxy Groups
Phys.Rev.Lett. **120** (2018) 101101 arXiv:1708.09385

13. P. Ilten, N. L. Rodd, J. Thaler, M. Williams
Disentangling Heavy Flavor at Colliders
Phys.Rev. **D96** (2017) 054019 arXiv:1702.02947

12. T. Cohen, K. Murase, N. L. Rodd, B. R. Safdi, Y. Soreq
Gamma-ray Constraints on Decaying Dark Matter and Implications for IceCube
Phys.Rev.Lett. **119** (2017) 021102 arXiv:1612.05638

11. G. Ovanesyan, N. L. Rodd, T. R. Slatyer, I. W. Stewart
The One-Loop Correction to Heavy Dark Matter Annihilation
Phys.Rev. **D95** (2017) 055001 arXiv:1612.05638

10. S. Mishra-Sharma, N. L. Rodd, B. R. Safdi — Astron.J. **153** (2017) 253
NPTFit: A code package for Non-Poissonian Template Fitting — arXiv:1612.03173

9. T. Linden, N. L. Rodd, B. R. Safdi, T. R. Slatyer — Phys.Rev. **D94** (2016) 103013
The High-Energy Tail of the Galactic Center Gamma-Ray Excess — arXiv:1604.01026

8. G. Elor, N. L. Rodd, T. R. Slatyer, W. Xu — JCAP **1606**, 024 (2015)
Model-Independent Indirect Detection Constraints on Hidden Sector Dark Matter — arXiv:1511.08787

7. G. Elor, N. L. Rodd, T. R. Slatyer — Phys.Rev. **D91** (2015) 103531
Multi-Step Cascade Annihilations of Dark Matter and the Galactic Center Excess — arXiv:1503.01773

6. T. Daylan, D. P. Finkbeiner, D. Hooper, T. Linden, S. K. N. Portillo, N. L. Rodd, T. R. Slatyer — Phys.Dark Univ. **12** (2016) arXiv:1402.6703
The Characterization of the Gamma-Ray Signal from the Central Milky Way: A Case for Annihilating Dark Matter

5. P. W. Angel, Y. Cai, N. L. Rodd, M. A. Schmidt, R. R. Volkas — JHEP **1310** (2013) 118 — arXiv:1308.0463
Testable two-loop radiative neutrino mass model based on an $LLQd^cQd^c$ effective operator

4. A. Kobakhidze, N. L. Rodd — Int.J.Theor.Phys. **52** (2013) 2636 — arXiv:1307.5126
Time-symmetric quantization in spacetimes with event horizons

3. P. W. Angel, N. L. Rodd, R. R. Volkas — Phys.Rev. **D87** (2013) 073007 — arXiv:1212.6111
Origin of neutrino masses at the LHC: $\Delta L = 2$ effective operators and their ultraviolet completions

2. The ATLAS Collaboration — JHEP **12** (2012) 7 — arXiv:1210.4538
Search for anomalous production of prompt like-sign lepton pairs at $\sqrt{s} = 7$ TeV with the ATLAS detector

1. The ATLAS Collaboration — Eur.Phys.J. **C72** (2012) 2244 — arXiv:1210.5070
Search for doubly charged Higgs bosons in like-sign dilepton final states with the ATLAS detector
(Only listed as internal author on this paper due to ATLAS regulations allowing a maximum of one publication before service work has been completed.)

Plenaries & Colloquia

Melbourne University	December 2019
Next Frontiers in the Search for Dark Matter, Florence, Italy	September 2019
In Pursuit of New Particles and Paradigms, Aspen, USA	March 2019

Seminars

LHC Results Forum, UC Santa Cruz, INPA LBNL, UC Davis, University of Maryland, BSM PANDEMIC, Brown University	2020
UC San Diego, UC Davis, University of Washington, UC Santa Cruz, SLAC	2019
Stanford, Melbourne University, UC Berkeley	2018
Harvard, University of Michigan, Princeton, The Ohio State University (Price Prize Seminar), UC Berkeley, UC Irvine, University of Oregon, Fermilab, New York University, The Ohio State University, Perimeter Institute, Virginia Tech, Pennsylvania State University	2017
Monash University, Melbourne University, McGill University	2016

Conference Talks

APS April Meeting, Virtual	April 2020
New Techniques for Dark Matter Discovery, Vancouver, Canada	March 2020
TeV Particle Astrophysics 2019, Sydney, Australia	December 2019
NEPLES-2019, Seoul, South Korea	September 2019
Next Frontiers in the Search for Dark Matter, Florence, Italy	September 2019
APS April Meeting, Denver, USA	April 2019
Berkeley week at IPMU, Kashiwa, Japan	January 2019
TeV Particle Astrophysics 2018, Berlin, Germany	August 2018
TeV Particle Astrophysics 2017, Columbus, USA	August 2017
Cosmic Rays, Pulsars & Dark Matter, Santa Fe, USA	March 2017
CosPA 2016, Sydney, Australia	November 2016

	TeV Particle Astrophysics 2016, CERN, Switzerland	September 2016
	LoopFest XV, Buffalo, USA	August 2016
	Gamma Rays & Dark Matter, Obergurgl, Austria	December 2015
	Intense Electron Beams Workshop, Ithaca, USA	June 2015
	CIPANP 2015, Vail, USA	May 2015
	Astroparticle Physics 2014, Amsterdam, Netherlands	June 2014
	Strings and Super Yang Mills, Melbourne, Australia	April 2013
	Australian-Italian Symposium, Melbourne, Australia	April 2012
	CoEPP Workshop, Lorne, Australia	February 2012
Conference Posters	Sixth International Fermi Symposium, Arlington, USA	November 2015
	Debates on the Nature of Dark Matter, Cambridge, USA	May 2014
	CoEPP Workshop, Cairns, Australia	July 2013
Teaching Experience	Quantum Field Theory 1 (TA and delivered 4 lectures), MIT (6.3/7)	Spring 2018
	Relativity (TA), MIT (6.0/7)	Fall 2017
	Relativity (TA), MIT	Fall 2014
	Quantum Field Theory (TA), Melbourne University	2013
	Physics for Biomed (Recitation Instructor), Melbourne University	2012
	Introductory physics laboratory (Demonstrator), Melbourne University	2011
	(Student evaluation scores are given in parentheses where applicable.)	
Mentoring	Michael Toomey (undergraduate)	2017-2018
Service	**Referee:** Physical Review Letters, Physical Review D, Journal of High Energy Physics, Physics Letters B, Computer Physics Communication	
	Dark matter convener for TeVPA 2019, Sydney, Australia	December 2019
	Co-organizer of mini-workshop on the Galactic Center excess, Columbus, OH	August 2017
	Organizer of summer school on the NPTF, MIT	June 2017
	LBNL Particle Seminar Organizer, Lawrence Berkeley National Laboratory	2019-Present
	Beyond the Standard Model Journal Club Organizer, MIT	2015-2017