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

PUBLICATIONS

38. J. A. Dror, H. Murayama, N. L. Rodd   arXiv:2101.09287
    The Cosmic Axion Background

37. G. N. Remmen, N. L. Rodd   arXiv:2010.04723
    Signs, Spin, SMEFT: Positivity at Dimension Six

36. J. W. Foster, Y. Kahn, R. Nguyen, N. L. Rodd, B. R. Safdi   arXiv:2009.14201
    Dark Matter Interferometry

35. L. Rinchiuso, O. Macias, E. Moulin, N. L. Rodd, T. R. Slatyer   Phys.Rev. **D103** (2021) 023011
    Prospects for Heavy WIMP Dark Matter with CTA: the Wino and Higgsino   arXiv:2008.00692

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   SciPost Phys. **9** (2020) 068
    Indirect searches for dark matter bound state formation   arXiv:2007.13787
    and level transitions

32. F. List, N. L. Rodd, G. F. Lewis, and I. Bhat   Phys.Rev.Lett. **125** (2020) 241102
    The GCE in a New Light: Disentangling the γ-ray Sky   arXiv:2006.12504
    with Bayesian Graph Convolutional Neural Networks

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

30. G. N. Remmen, N. L. Rodd   Phys.Rev.Lett. **125** (2020) 081601
    Flavor Constraints from Unitarity and Analyticity   arXiv:2004.02885

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
NPTFit: A code package for Non-Poissonian Template Fitting
Astron.J. **153** (2017) 253
arXiv:1612.03173

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

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

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

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

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

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

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

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

1. The ATLAS Collaboration
*Search for doubly charged Higgs bosons in like-sign dilepton
final states with the ATLAS detector*
Eur.Phys.J. **C72** (2012) 2244
arXiv:1210.5070

(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, KICP, University of Minnesota, Technical University of Munich, Korea Institute for Advanced Study, University of Padua	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	Electroweak effects at high energy, Virtual	September 2020
	DM Radio Collaboration Meeting, Virtual	August 2020
	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
	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 available.)	

MENTORING	Florian List (graduate)	2020-present
	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	2019-2020
	Beyond the Standard Model Journal Club Organizer, MIT	2015-2017

OUTREACH	Adopt-a-Physicist	2020
	Presentation at El Cerrito High School	2020
	Presentation to PHYS 153 transfer students, UC Berkeley	2020

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
	Hitoshi Murayama University of California, Berkeley	hitoshi@berkeley.edu
	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