

# Nicholas Llewellyn Rodd

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## CURRENT ACADEMIC POSITION

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2018 – Present   **University of California, Berkeley**  
MILLER RESEARCH FELLOW

## EDUCATION

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2013 – 2018   **Massachusetts Institute of Technology**  
PH.D. PHYSICS  
ADVISOR: Tracy Slatyer  
THESIS: Listening to the Universe through Indirect Detection

2011 – 2012   **Melbourne University**  
M.SC. (DISTINCTION) PHYSICS  
ADVISORS: Raymond Volkas and Elisabetta Barberio  
THESIS: Analysis of neutrino mass effective operators  
and testing their signatures at the Large Hadron Collider

2006 – 2010   **Melbourne University**  
B.SC. AND LL.B. (HONS)

Spring 2009   **University of California, Berkeley**  
B.SC. one semester exchange

## SELECTED AWARDS

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2020   **APS DAP Cecilia Payne-Gaposchkin Thesis Award Finalist**

2019   **J. J. and Noriko Sakurai Dissertation Award in Theoretical Particle Physics**

2018   **Miller Research Fellowship**

2017   **Price Prize in Cosmology and AstroParticle Physics**

2016   **Andrew M. Lockett III Memorial Fund Award, MIT**

2015   **American Australian Association's ConocoPhillips Fellowship**

2015   **Acevedo Fellowship, MIT**

2013   **Kerman Fellowship, MIT**

2013   **Fulbright Postgraduate Scholarship** (declined)

2012   **Henry James Williams Scholarship, Melbourne University**

2011   **Bryan Scholarship in Natural Science, Melbourne University**

2005   **Australian Students Prize**

## PUBLICATIONS

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Authors are generally listed alphabetically, following the standard in particle physics.

29. M. Buschmann, N. L. Rodd, B. R. Safdi, L. J. Chang, ARXIV:2002.12373  
S. Mishra-Sharma, M. Lisanti, O. Macias  
*Foreground Mismodeling and the Point Source Explanation of the Fermi Galactic Center Excess*
28. IceCube Collaboration ARXIV:1909.08623  
*A Search for Neutrino Point-Source Populations in 7 Years of IceCube Data with Neutrino-count Statistics*
27. L. J. Chang, S. Mishra-Sharma, M. Lisanti, PHYS.REV. **D101** (2020) 023014  
M. Buschmann, N. L. Rodd, B. R. Safdi ARXIV:1908.10874  
*Characterizing the Nature of the Unresolved Point Sources in the Galactic Center*
26. G. N. Remmen, N. L. Rodd JHEP **1912** (2019) 032  
*Consistency of the Standard Model Effective Field Theory* ARXIV:1908.09845
25. The ABRACADABRA Collaboration PHYS.REV. **D99** (2019) 052012  
*Design and Implementation of the ABRACADABRA-10 cm* ARXIV:1901.10652  
*Axion Dark Matter Search*
24. C. Dessert, N. L. Rodd, B. R. Safdi ARXIV:1812.06976  
*Evidence against the decaying dark matter interpretation of the 3.5 keV line from blank sky observations*
23. The ABRACADABRA Collaboration PHYS. REV. LETT. **122** (2018) 121802  
*First Results from ABRACADABRA-10 cm:* ARXIV:1810.12257  
*A Search for Sub- $\mu$ eV Axion Dark Matter*
22. M. Baumgart, T. Cohen, E. Moulin, I. Mout, L. Rinchuso, JHEP **1901** (2019) 036  
N. L. Rodd, T. R. Slatyer, I. W. Stewart, V. Vaidya ARXIV:1808.08956  
*Precision Photon Spectra for Wino Annihilation*
21. L. Rinchuso, N. L. Rodd, I. Mout, E. Moulin, M. Baumgart, PHYS.REV. **D98** (2018) 123014  
T. Cohen, T. R. Slatyer, I. W. Stewart, V. Vaidya ARXIV:1808.04388  
*Hunting for Heavy Winos in the Galactic Center*
20. M. Baumgart, T. Cohen, I. Mout, N. L. Rodd, JHEP **1803** (2018) 117  
T. R. Slatyer, M. P. Solon, I. W. Stewart, V. Vaidya ARXIV:1712.07656  
*Resummed Photon Spectra for WIMP Annihilation*
19. J. W. Foster, N. L. Rodd, B. R. Safdi PHYS.REV. **D97** (2018) 123006  
*Revealing the Dark Matter Halo with Axion Direct Detection* ARXIV:1711.10489

18. The HAWC Collaboration JCAP **1802** (2018) 049  
ARXIV:1710.10288  
*A Search for Dark Matter in the Galactic Halo with HAWC*
17. R. Bartels, D. Hooper, T. Linden, S. Mishra-Sharma, PHYS.DARK UNIV. **20** (2016) 88  
ARXIV:1710.10266  
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]*
16. R. E. Keeley, S. N. Abazajian, A. Kwa, N. L. Rodd, B. R. Safdi PHYS.REV. **D97** (2018) 103007  
ARXIV:1710.03215  
*What the Milky Way’s Dwarfs tell us about the Galactic Center extended excess*
15. M. Lisanti, S. Mishra-Sharma, N. L. Rodd, B. R. Safdi, R. H. Wechsler PHYS.REV. **D97** (2018) 063005  
ARXIV:1709.00416  
*Mapping Extragalactic Dark Matter Annihilation with Galaxy Surveys: A Systematic Study of Stacked Group Searches*
14. M. Lisanti, S. Mishra-Sharma, N. L. Rodd, B. R. Safdi PHYS. REV. LETT. **120** (2018) 101101  
ARXIV:1708.09385  
*A Search for Dark Matter Annihilation in Galaxy Groups*
13. P. Ilten, N. L. Rodd, J. Thaler, M. Williams PHYS.REV. **D96** (2017) 054019  
ARXIV:1702.02947  
*Disentangling Heavy Flavor at Colliders*
12. T. Cohen, K. Murase, N. L. Rodd, B. R. Safdi, Y. Soreq PHYS. REV. LETT. **119** (2017) 021102  
ARXIV:1612.05638  
*Gamma-ray Constraints on Decaying Dark Matter and Implications for IceCube*
11. G. Ovanessian, N. L. Rodd, T. R. Slatyer, I. W. Stewart PHYS.REV. **D95** (2017) 055001  
ARXIV:1612.05638  
*The One-Loop Correction to Heavy Dark Matter Annihilation*
10. S. Mishra-Sharma, N. L. Rodd, B. R. Safdi ASTRON.J. **153** (2017) 253  
ARXIV:1612.03173  
*NPTFit: A code package for Non-Poissonian Template Fitting*
9. T. Linden, N. L. Rodd, B. R. Safdi, T. R. Slatyer PHYS.REV. **D94** (2016) 103013  
ARXIV:1604.01026  
*The High-Energy Tail of the Galactic Center Gamma-Ray Excess*
8. G. Elor, N. L. Rodd, T. R. Slatyer, W. Xue JCAP **1606**, 024 (2015)  
ARXIV:1511.08787  
*Model-Independent Indirect Detection Constraints on Hidden Sector Dark Matter*
7. G. Elor, N. L. Rodd, T. R. Slatyer PHYS.REV. **D91** (2015) 103531  
ARXIV:1503.01773  
*Multi-Step Cascade Annihilations of Dark Matter and the Galactic Center Excess*
6. T. Daylan, D. P. Finkbeiner, D. Hooper, T. Linden, PHYS.DARK UNIV. **12** (2016) 1  
ARXIV:1402.6703  
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*
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  $LLQd^c Qd^c$  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*  
Note only listed as internal author on this paper due to ATLAS regulations allowing a maximum of one publication  
before service work has been completed.

## INVITED PLENARIES AND COLLOQUIA

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Melbourne University	DECEMBER 2019
In Pursuit of New Particles and Paradigms, Aspen, USA	MARCH 2019

## INVITED SEMINARS

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	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

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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

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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

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Student evaluation scores are given in parentheses where applicable.

Quantum Field Theory I (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

## SERVICE

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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
LBNL Particle Seminar Organizer, Lawrence Berkeley National Laboratory	2019-PRESENT
Organizer of summer school on the NPTF, MIT	JUNE 2017

## REFERENCES

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