



NICHOLAS L. RODD

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| CONTACT | CERN TH CH-1211 Geneva 23 Switzerland |  nrodd@cern.ch  nickrodd.com  github.com/nickrodd |
| POSITIONS | CERN LD Staff Member University of California, Berkeley Miller Research Fellow | 2021-present 2018-2021 |
| EDUCATION | Massachusetts Institute of Technology Ph.D. Physics Advisor: Tracy Slatyer Thesis: Listening to the Universe through Indirect Detection  Melbourne University 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 B.Sc. & LL.B. (Hons) | 2013-2018 2011-2012 2006-2010 |
| SELECTED AWARDS | APS DAP Cecilia Payne-Gaposchkin Thesis Award J. J. and Noriko Sakurai Dissertation Award in Theoretical Particle Physics Miller Research Fellowship Price Prize in Cosmology and AstroParticle Physics Andrew M. Lockett III Memorial Fund Award, MIT Acevedo Fellowship, MIT Kerman Fellowship, MIT Fulbright Postgraduate Scholarship (declined) Henry James Williams Scholarship, Melbourne University Bryan Scholarship in Natural Science, Melbourne University Raynes Dickson Memorial Exhibition in Deals, Melbourne University Australian Students Prize | 2020 2019 2018 2017 2016 2015 2013 2013 2012 2011 2010 2005 |
| PUBLICATIONS | 44. G. N. Remmen, N. L. Rodd <i>Spinning Sum Rules for the Dimension-Six SMEFT</i> 43. V. Domcke, C. Garcia-Cely, N. L. Rodd <i>A novel search for high-frequency gravitational waves with low-mass axion haloscopes</i> 42. F. List, N. L. Rodd, G. F. Lewis <i>Dim but not entirely dark: Extracting the Galactic Center Excess' source-count distribution with neural nets</i> 41. G. H. Collin, N. L. Rodd, T. Erjavec, K. Perez <i>A Compound Poisson Generator approach to Point-Source Inference in Astrophysics</i> 40. The ABRACADABRA Collaboration <i>The search for low-mass axion dark matter with ABRACADABRA-10cm</i> 39. J. W. Foster, M. Kongsore, C. Dessert, Y. Park, N. L. Rodd, K. Cranmer, B. R. Safdi <i>A deep search for decaying dark matter with XMM-Newton blank-sky observations</i> 38. J. A. Dror, H. Murayama, N. L. Rodd <i>The Cosmic Axion Background</i> | arXiv:2206.13524 Phys.Rev.Lett. 129 (2022) 041101 arXiv:2202.00695 Phys.Rev. D104 (2021) 123022 arXiv:2107.09070 Astrophys.J. 260 (2022) 29 arXiv:2104.04529 Phys.Rev.Lett. 127 (2021) 081801 arXiv:2102.06722 Phys.Rev.Lett. 127 (2021) 051101 arXiv:2102.02207 Phys.Rev. D103 (2021) 115004[†] arXiv:2101.09287 |

37. G. N. Remmen, N. L. Rodd *Phys.Rev.* **D105** (2022) 036006
Signs, Spin, SMEFT: Sum Rules at Dimension Six arXiv:2010.04723
36. J. W. Foster, Y. Kahn, R. Nguyen, N. L. Rodd, B. R. Safdi *Phys.Rev.* **D103** (2021) 076018[†]
Dark Matter Interferometry arXiv:2009.14201
35. L. Rinchuso, 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 *JHEP* **06** (2021) 121
Dark Matter Spectra from the Electroweak to the Planck Scale arXiv:2007.15001
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 and level transitions arXiv:2007.13787
32. F. List, N. L. Rodd, G. F. Lewis, I. Bhat *Phys.Rev.Lett.* **125** (2020) 241102
The GCE in a New Light: Disentangling the γ -ray Sky with Bayesian Graph Convolutional Neural Networks arXiv:2006.12504
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 of the 3.5 keV line is inconsistent with blank-sky observations" arXiv:2006.03974
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 *Phys.Rev.* **D102** (2020) 023023
Foreground Mismodeling and the Point Source Explanation of the Fermi Galactic Center Excess arXiv:2002.12373
28. The IceCube Collaboration *Astrophys.J.* **893** (2020) 102
A Search for Neutrino Point-Source Populations in 7 Years of IceCube Data with Neutrino-count Statistics arXiv:1909.08623
27. L. J. Chang, S. Mishra-Sharma, M. Lisanti, M. Buschmann, N. L. Rodd, B. R. Safdi *Phys.Rev.* **D101** (2020) 023014
Characterizing the Nature of the Unresolved Point Sources in the Galactic Center arXiv:1908.10874
26. G. N. Remmen, N. L. Rodd *JHEP* **12** (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 Axion Dark Matter Search arXiv:1901.10652
24. C. Dessert, N. L. Rodd, B. R. Safdi *Science* **367** (2020) 6485
The dark matter interpretation of the 3.5-keV line is inconsistent with blank-sky observations arXiv:1812.06976
23. The ABRACADABRA Collaboration *Phys.Rev.Lett.* **122** (2018) 121802
First Results from ABRACADABRA-10 cm: A Search for Sub- μ eV Axion Dark Matter arXiv:1810.12257
22. M. Baumgart, T. Cohen, E. Moulin, I. Mout, L. Rinchuso, N. L. Rodd, T. R. Slatyer, I. W. Stewart, V. Vaidya *JHEP* **01** (2019) 036
Precision Photon Spectra for Wino Annihilation arXiv:1808.08956
21. L. Rinchuso, N. L. Rodd, I. Mout, E. Moulin, M. Baumgart, T. Cohen, T. R. Slatyer, I. W. Stewart, V. Vaidya *Phys.Rev.* **D98** (2018) 123014
Hunting for Heavy Winos in the Galactic Center arXiv:1808.04388
20. M. Baumgart, T. Cohen, I. Mout, N. L. Rodd, T. R. Slatyer, M. P. Solon, I. W. Stewart, V. Vaidya *JHEP* **03** (2018) 117
Resummed Photon Spectra for WIMP Annihilation arXiv:1712.07656
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
A Search for Dark Matter in the Galactic Halo with HAWC arXiv:1710.10288
17. R. Bartels, D. Hooper, T. Linden, S. Mishra-Sharma, Phys.Dark Univ. **20** (2016) 88
N. L. Rodd, B. R. Safdi, T. R. Slatyer arXiv:1710.10266
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
What the Milky Way’s Dwarfs tell us about the Galactic Center extended excess arXiv:1710.03215
15. M. Lisanti, S. Mishra-Sharma, N. L. Rodd, Phys.Rev. **D97** (2018) 063005
B. R. Safdi, R. H. Wechsler 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
A Search for Dark Matter Annihilation in Galaxy Groups arXiv:1708.09385
13. P. Ilten, N. L. Rodd, J. Thaler, M. Williams Phys.Rev. **D96** (2017) 054019
Disentangling Heavy Flavor at Colliders arXiv:1702.02947
12. T. Cohen, K. Murase, N. L. Rodd, B. R. Safdi, Y. Soreq Phys.Rev.Lett. **119** (2017) 021102
Gamma-ray Constraints on Decaying Dark Matter and Implications for IceCube arXiv:1612.05638
11. G. Ovanessian, N. L. Rodd, T. R. Slatyer, I. W. Stewart Phys.Rev. **D95** (2017) 055001
The One-Loop Correction to Heavy Dark Matter Annihilation 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, Phys.Dark Univ. **12** (2016)
S. K. N. Portillo, N. L. Rodd, T. R. Slatyer 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 **10** (2013) 118
Testable two-loop radiative neutrino mass model based on an $LLQd^cQd^c$ effective operator arXiv:1308.0463
4. A. Kobakhidze, N. L. Rodd Int.J.Theor.Phys. **52** (2013) 2636
Time-symmetric quantization in spacetimes with event horizons arXiv:1307.5126
3. P. W. Angel, N. L. Rodd, R. R. Volkas Phys.Rev. **D87** (2013) 073007
Origin of neutrino masses at the LHC: $\Delta L = 2$ effective operators and their ultraviolet completions arXiv:1212.6111
2. The ATLAS Collaboration JHEP **12** (2012) 7
Search for anomalous production of prompt like-sign lepton pairs at $\sqrt{s} = 7$ TeV with the ATLAS detector arXiv:1210.4538
1. The ATLAS Collaboration Eur.Phys.J. **C72** (2012) 2244
Search for doubly charged Higgs bosons in like-sign dilepton final states with the ATLAS detector 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.)

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| WHITE PAPERS | 5. K. K. Boddy, M. Lisanti, S. D. McDermott, N. L. Rodd,* C. Weniger, et al. <i>Astrophysical and Cosmological Probes of Dark Matter</i> | JHEAp 35 (2022) 112 arXiv:2203.06380 |
| | 4. D. Carney, N. L. Rodd, et al. <i>Ultraheavy particle dark matter</i> | arXiv:2203.06508 |
| | 3. S. Ando, N. L. Rodd, et al. <i>Synergies between dark matter searches and multiwavelength/multimessenger astrophysics</i> | arXiv:2203.06781 |
| | 2. R. Leane, N. L. Rodd, et al. <i>Puzzling Excesses in Dark Matter Searches and How to Resolve Them</i> | arXiv:2203.06859 |
| | 1. M. Baumgart, N. L. Rodd, et al. <i>Effective Field Theories for Dark Matter Phenomenology</i> | arXiv:2203.08204 |
| PLENARIES & COLLOQUIA [‡] | Aspen Center for Physics | August 2022 |
| | University of Amsterdam GRAPPA | June 2022 |
| | Exploring the Dark Universe 33rd Rencontres de Blois Blois, France | May 2022 |
| | Snowmass Theory Frontier Conference, Santa Barbara, USA | February 2022 |
| | XIX International Workshop on Neutrino Telescopes, Virtual | February 2021 |
| | Melbourne University | December 2019 |
| | Next Frontiers in the Search for Dark Matter, Florence, Italy | September 2019 |
| CONFERENCE TALKS [‡] | In Pursuit of New Particles and Paradigms, Aspen, USA | March 2019 |
| | CERN-CKC workshop, Jeju Island, South Korea | June 2022 |
| | Novel Hidden Sectors: From Colliders to Cosmology, Munich, Germany | May 2022 |
| | Computational Tools for High Energy Physics and Cosmology, Virtual | November 2021 |
| | New Physics from The Sky, Florence, Italy | October 2021 |
| | PANIC 2021 Lisbon Portugal, Virtual | September 2021 |
| | CMB-S4 collaboration meeting, Virtual | August 2021 |
| | 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 |
| SEMINARS [‡] | UIUC, Stanford, University of Victoria and TRIUMF (joint), | 2022 |
| | University of Florida and Florida State University (joint), DESY, University of Geneva (Cosmology department), University of Geneva (Particle Physics department) | |
| | Miller Lunch Talk, University of Cambridge, University of Michigan, Rutgers University, CERN, University of Sydney, Kavli IPMU, ARC Centre of Excellence for Dark Matter, University of Melbourne, KASI, McGill University, UC Santa Cruz | 2021 |

* Editor

[‡] Talks listed in blue contain a link to a recording

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| | 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 |
| TEACHING EXPERIENCE [‡] | Schools and Lectures | |
| | * BCVSPIN-2021: Probing the Mysteries of the Universe | January 2022 |
| | * IPMU Pedagogical Seminar Series | November 2021 |
| | 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) | 2020-2021 |
| | Michael Toomey (undergraduate) | 2017-2018 |
| SERVICE | Referee: Physical Review Letters, Physical Review D, Journal of High Energy Physics, Physics Letters B, SciPost, The Astrophysical Journal, Computer Physics Communication | |
| | Organizer of Second EuCAPT Annual Symposium | May 2022 |
| | Organizer of New Methods and Ideas at the Frontiers of Particle Physics | March 2022 |
| | Winter Aspen Conference | |
| | Organizer of the HEP/Astro Results Forum | 2021- |
| | Convener for COSMO'21, University of Illinois and Online | August 2021 |
| | 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 |
| | Ph.D. Thesis Committee | |
| | * Harrison Ploeg, “The Galactic Millisecond Pulsar Population – Implications for the Galactic Center Excess” (Chris Gordon, University of Canterbury) | August 2021 |
| OUTREACH | Interview on Radio Physics | 2022 |
| | Interview with The Scientist Reach Out Group – recording available here | 2022 |
| | Presentation at the Berkeley High School Physics Club – recording available here | 2021 |
| | Organizer of and Presenter at “Meet a Miller Fellow,” El Cerrito High School | 2020-2021 |
| | Adopt-a-Physicist | 2020 |
| | Presentation to PHYS 153 transfer students, UC Berkeley | 2020 |
| REFERENCES | Tracy Slatyer Massachusetts Institute of Technology | tslatyer@mit.edu |
| | Benjamin Safdi University of California, Berkeley | brsafdi@berkeley.edu |
| | Christian Bauer Lawrence Berkeley National Laboratory | cwbauer@lbl.gov |
| | Gian Giudice CERN | Gian.Giudice@cern.ch |
| | Hitoshi Murayama University of California, Berkeley | hitoshi@berkeley.edu |
| | Marco Cirelli Laboratoire de Physique Théorique et Hautes Énergies marco.cirelli@lpthe.jussieu.fr | |
| | Christoph Weniger University of Amsterdam | c.weniger@uva.nl |