

REBECCA K. LEANE

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| CONTACT INFORMATION | Office 403, David Caro Building School of Physics, The University of Melbourne Victoria 3010, Australia | +61 439 838 547 rleane@physics.unimelb.edu.au rebeccaleane.com |
| RESEARCH INTERESTS | Dark Matter Phenomenology, Astroparticle Physics, Collider Physics, Physics beyond the Standard Model | |
| EDUCATION | University of Melbourne <i>Centre of Excellence for Particle Physics at the Terascale (CoEPP)</i> Ph.D. in Physics (Expected July 2017) Thesis Advisor: A/Prof. Nicole Bell | 2013-Present |
| | University of Cambridge <i>Department of Applied Mathematics and Theoretical Physics (DAMTP)</i> Master of Advanced Study in Mathematics (Part III of the Mathematical Tripos) Essay Advisor: Prof. Ben Allanach | 2012-2013 |
| | Monash University Bachelor of Science Advanced with Honours Majors: Physics and Mathematics. High Distinction. Thesis Advisor: A/Prof. Csaba Balazs | 2008-2011 |
| RESEARCH EXPERIENCE | Visiting Researcher Center for Cosmology and AstroParticle Physics (CCAPP), Ohio State University, USA Collaborating with Prof. John Beacom | Apr-Jun 2016 |
| | Visiting Researcher Vanderbilt University, USA Collaborating with Prof. Tom Weiler | Sep-Oct 2015 |
| | Graduate Student Researcher CoEPP, University of Melbourne, Australia Under supervision of A/Prof. Nicole Bell | 2013-2017 |
| | Undergraduate Student Researcher Monash University, Australia Third year research project (2010), honours year research project (2011) Under supervision of A/Prof. Csaba Balazs | 2010-2011 |
| PRIZES, AWARDS & SCHOLARSHIPS | Royal Society of Victoria Young Scientist Research Prize | 2016 |
| | Science Abroad Travelling Scholarship | 2016 |
| | Best PhD Candidate Seminar of the Year in the School of Physics, U. Melbourne | 2015 |
| | 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 |

PUBLICATIONS

1. N. F. Bell, Y. Cai and **R. K. Leane**, “Impact of Mass Generation for Simplified Dark Matter Models”, Submitted to JCAP [arXiv:[1610.03063](#) [hep-ph]].
2. N. F. Bell, Y. Cai and **R. K. Leane**, “Dark Forces in the Sky: Signals from Z' and the Dark Higgs”, JCAP 08 (2016) 001 [arXiv:[1605.09382](#) [hep-ph]].
3. N. F. Bell, Y. Cai and **R. K. Leane**, “Mono- W Dark Matter Signals at the LHC: Simplified Model Analysis”, JCAP 01 (2016) 051 [arXiv:[1512.00476](#) [hep-ph]].
4. N. F. Bell, Y. Cai, J. B. Dent, **R. K. Leane** and T. J. Weiler, “Dark matter at the LHC: Effective field theories and gauge invariance”, Phys. Rev. D 92, no. 5 053008 (2015) [arXiv:[1503.07874](#) [hep-ph]].
5. N. F. Bell, Y. Cai, **R. K. Leane** and A. D. Medina, “Leptophilic dark matter with Z' interactions”, Phys. Rev. D 90, no. 3, 035027 (2014) [arXiv:[1407.3001](#) [hep-ph]].
6. G. Brooijmans et al, “Les Houches 2011: Physics at TeV Colliders New Physics Working Group Report”, FERMILAB-CONF-12-924-T (2012) [arXiv:[1203.1488](#) [hep-ph]].
(Note: Contribution 1, “DLHA: Dark Matter Les Houches Agreement”, is heavily based on my bachelor thesis.)

INVITED
SEMINARS &
CONFERENCE
TALKS

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| <i>“Unitarity and Gauge Invariance in Dark Matter Models”</i> | |
| CETUP Dark Matter Workshop Talk, South Dakota, USA | Jul 2016 |
| Particle Theory Seminar, University of Cincinnati, USA | May 2016 |
| <i>“Dark Forces in the Sky: Signals from Z' and the Dark Higgs”</i> | |
| Astroparticle Physics Seminar, CCAPP, Ohio State University, USA | Jun 2016 |
| Particle Theory Seminar, UC Riverside, USA | May 2016 |
| Particle Theory Seminar, UC Irvine, USA | May 2016 |
| Pheno 2016 Symposium Parallel Talk, Pittsburgh, USA | May 2016 |
| Particle Theory Seminar, University of Melbourne, Australia | Apr 2016 |
| <i>“Dark Matter at the LHC”</i> | |
| Particle Theory Seminar, SLAC National Accelerator Laboratory, USA | Oct 2015 |
| Astroparticle Physics Seminar, CCAPP, Ohio State University, USA | Oct 2015 |
| Astroparticle Physics Seminar, Fermilab, USA | Sep 2015 |
| Astroparticle Physics Seminar, Vanderbilt University, USA | Sep 2015 |
| <i>“Dark Matter at the LHC: EFTs, Gauge Invariance and the Mono-W”</i> | |
| Particle Theory Seminar, University of Melbourne, Australia | Aug 2015 |
| <i>“Dark Matter at the LHC: EFTs and Gauge Invariance”</i> | |
| SUSY Conference Parallel Talk, Lake Tahoe, USA | Aug 2015 |
| Geoff Opat Seminar Series, University of Melbourne, Australia | May 2015 |
| <i>“Leptophilic Dark Matter with Z' Interactions”</i> | |
| CosPA Conference Parallel Talk, New Zealand | Dec 2014 |
| APCosPA Workshop Talk, University of Tokyo/RESCEU, Japan | Jul 2014 |
| <i>“Dark Matter and the Universe”</i> | |
| St Edmund’s Academic Talks Series, University of Cambridge, UK | Jun 2013 |

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| OUTREACH | Key Scientific Researcher on International Science Documentary Series | 2014-2015 |
| | <i>“Uranium: Twisting the Dragon’s Tail”</i> | |
| | Worked with Emmy Award winning producer Sonya Pemberton and writer Wain Fimeri part time over 12 months. Had a major role in explaining science content and developing the script for the series. Aired in the United States, Australia, Germany, France, Middle East, Norway and Sweden. The series has been nominated for and won several science communication and film awards. | |
| | 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 |
| TEACHING | Public Talk, Monash University Open Day Seminar Series, Australia | 2011 |
| | Physics Demonstrator, Monash University Open Day, Australia | 2011 |
| | ATLAS International Masterclass Tutor, Univ. of Melbourne | 2015 |
| | Physics Teaching Assistant (Tutorials, Grading, Office Hours), Univ. of Melbourne | 2014 |
| | Physics Teaching Assistant (Lab Demonstrator, Grading), Univ. of Melbourne | 2012 |
| TECHNICAL SKILLS | Physics Teaching Assistant (Lab Demonstrator, Grading), Monash University | 2011 |
| | High School Senior Tutoring, Physics and Mathematics | 2008-2010 |
| | Languages: C++, Python, Bash, Mathematica. | |
| TECHNICAL SKILLS | Packages & Frameworks: FeynRules, MadGraph, Pythia, ROOT, MadAnalysis, Fastjet, Delphes, micrOMEGAs, PPC4DMID, FeynArts, FeynCalc, TikZ, matplotlib. | |
| | Other: Linux OS, L ^A T _E X. | |