

# Curriculum Vitae

## Nassim Bozorgnia

Department of Physics  
University of Alberta  
Centennial Centre for Interdisciplinary Science  
Edmonton, AB T6G 2E1, Canada  
Phone: 780-492-8078  
Email: [nbozorgnia@ualberta.ca](mailto:nbozorgnia@ualberta.ca)  
Website: [www.nbozorgnia.net](http://www.nbozorgnia.net)

### Education

- **Ph.D., Physics**, University of California, Los Angeles (UCLA), CA, USA, June 2012  
Dissertation: “Ion channeling in direct dark matter detection”  
Advisor: Professor Graciela B. Gelmini
- **M.S., Physics**, San Francisco State University (SFSU), San Francisco, CA, USA, May 2006  
Thesis: “Atmospheric features of transiting exoplanets”  
Advisor: Professor Debra Fischer
- **B.S., Physics**, Kharazmi University, Tehran, Iran, July 2004

### Employment

- **Assistant Professor**, Department of Physics, University of Alberta, Jul. 2022 – Present
- **Assistant Professor**, Department of Physics and Astronomy, York University, Jan. 2020 – Jun. 2022
- **Junior Research Fellow**, Institute for Particle Physics Phenomenology (IPPP), Durham University, Apr. 2018 – Dec. 2019  
Dark Matter Phenomenology
- **Research Associate**, IPPP, Durham University, Oct. 2017 – Mar. 2018  
Dark Matter Phenomenology
- **Postdoctoral Fellow**, GRAPPA Center of Excellence, University of Amsterdam, Oct. 2014 – Sep. 2017  
ERC project “WIMPs Kairos”, *Prof. Gianfranco Bertone*
- **Postdoctoral Visitor**, Oskar Klein Centre for Cosmoparticle Physics, Stockholm University, Apr. 2014 – Sep. 2014  
Phenomenology of WIMP Dark Matter, *Prof. Thomas Schwetz*
- **Early Stage Researcher**, EU Initial Training Network “Invisibles”, Max Planck Institute for Nuclear Physics (MPIK), Heidelberg, Sep. 2012 – Sep. 2014  
Phenomenology of WIMP Dark Matter, *Prof. Thomas Schwetz*

### Publications & Presentations Summary

#### Publication Statistics

30 peer-reviewed articles  
6 conference proceedings

**1,357** citations for published papers  
**45.2** average citations per published paper  
*h*-index: **19** ([INSPIRE database](#))

## Presentation Statistics

**91** conference presentations, seminars and colloquia:  
    **29** invited talks at conferences  
    **38** invited seminars and colloquia  
    **24** contributed talks

## Grants

- Canada Research Chair, Research Allowance, University of Alberta, Oct. 2022 – Oct. 2027, 100K CAD
- “Probing the Dark Matter Distribution in the Milky Way”, Natural Sciences and Engineering Research Council of Canada (NSERC) Discovery Grant, Reference Number: RGPIN-2020-07138, York University and the University of Alberta, Apr. 2020 – Mar. 2025, 145K CAD
- “Probing the Dark Matter Distribution in the Milky Way”, NSERC Discovery Launch Supplement, Reference Number: DGECR-2020-00231, York University and the University of Alberta, Apr. 2020 – Mar. 2025, 12.5K CAD
- McDonald Institute Highly Qualified Personnel Pooled Resources, York University and the University of Alberta, Sep. 2021 – Sep. 2023, 20K CAD
- “EXPLORE: Experiential Learning Opportunity through Research and Exchange”, Academic Innovation Fund, York University, May 2021 – May 2022, 45,840 CAD  
*Other project members: Jürgen Schaffner-Bielich, Saeed Rastgoo, Laura Sagunski, Sean Tulin*
- Junior Faculty Fund, York University, Feb. 2020, 1.1K CAD
- Minor Research Grant, York University, Feb. 2020, 2K CAD
- “Multichannel particle searches in precision era of Dark Matter astronomy”, SPRINT grant for international collaboration between GRAPPA Institute and ICTP-SAIFR, São Paulo, FAPESP: 2015/50073-0, Jul. 2015, 10K EUR  
*Local PI: Christoph Weniger*

## Fellowships and Awards

- Canada Research Chair in Astroparticle Physics, University of Alberta, Oct. 2022 – Oct. 2027
- International Junior Research Fellowship, IPPP, Durham University, Apr. 2018 – Sep. 2019
- Physics Department Fellowship, UCLA, 2008, 2010–2012
- University Tuition Award, UCLA, 2006–2012
- Graduate Research Mentorship Fellowship, UCLA, 2009
- Cota Robles Fellowship, UCLA, 2007
- Distinguished Achievement Award for Academic Excellence, SFSU, May 2006

- Robert W. Maxwell Memorial Scholarship, SFSU, May 2005
- San Francisco State University Graduate Fellowship Award, Mar. 2005
- Ranked 1st student, graduated with honors from Kharazmi University, Tehran, Iran, 2004

## Teaching Experience

### Undergraduate Teaching

- EN PH 131: Mechanics, University of Alberta, Winter 2023
- PHYS 4170/5590: Observational and Theoretical Cosmology, York University, Winter 2022
- PHYS 4010: Quantum Mechanics, York University, Fall 2020, 2021
- “ITFA Workshop: Introduction to Theoretical Physics” B.S. course, University of Amsterdam, Jan. 2016 & Jan. 2017

### Graduate Teaching

- PHYS 5020: Electromagnetism, York University, Winter 2020, 2021, 2022
- PHYS 6207: Theoretical Motivations of Dark Matter, York University, Winter 2020
- “Dark Matter Direct Detection” lectures in the M.S. particle theory course, Durham University, May 2018
- “GRAPPA Student Seminar” M.S. course, University of Amsterdam, Jun. 2017
- “Dark Matter Direct Detection” lectures in the M.S. course “Particle Cosmology”, University of Amsterdam, May 2015

### Lecturing and Tutoring at Schools

- Lecturer, “Direct detection of dark matter” lectures in the “School on Dark Matter”, ICTP-SAIFR, IFT-UNESP, São Paulo, Brazil, 27 Jun. – 9 Jul. 2016
- Tutor, Dark Matter Session, Invisibles13 School, Durham, UK, 9–15 Jul. 2013

## Supervision and Mentorship

### • Postdoctoral Fellows:

- Javier Reynoso, University of Alberta, Oct. 2023 – Oct. 2025
- Yaqi Han, York University, Dec. 2021 – Present

### • Graduate Students:

- Evan Vienneau, Ph.D. Student, University of Alberta, Sep. 2021 – Present
- Nima Ronaghikhameneh, M.S. Student, University of Alberta, Jan. 2021 – Present
- Adam Smith-Orlik, M.S. Student, York University, May 2020 – Present
- Keagan Blanchette, Ph.D. Student, York University, Sep. 2020 – Dec. 2021

- **Undergraduate Students:**

- Romina Ghasemizadeh, MITACS student (from Goethe University), University of Alberta, Jul.–Oct. 2023
- Jack MacArthur, EXPLORE Student, University of Alberta, Sep. 2022 – Mar. 2023
- Sergiy Kernytsky, EXPLORE Student (from York University), University of Alberta, Sep. 2022 – Mar. 2023
- Adrien Hopkins, EXPLORE Student (from York University), University of Alberta, Sep. 2022 – Mar. 2023
- Dhyan Thakkar, EXPLORE Student, York University, Jan.–May 2022
- Eyosyas Andarge, EXPLORE Student, York University, Jan.–May 2022
- Joshua Parsons, EXPLORE Student, York University, Jan.–May 2022
- Elham Rahimi, EXPLORE Student and undergraduate researcher (from York University), York University and University of Alberta, May 2021 – Oct. 2022
- Jasmin Hartmann, EXPLORE Student (from Goethe University), York University, May–Aug. 2021
- Lukas Arda, EXPLORE Student (from Goethe University), York University, May–Aug. 2021
- Kimberly (Kai) Davies, PHYS 4310 Undergraduate Research Course, York University, Sep.–Dec. 2020

## **Pedagogic Innovation**

Development of the EXPLORE Program in collaboration with Profs. Jürgen Schaffner-Bielich (Goethe University), Saeed Rastgoo (York University), Laura Sagunski (Goethe University), and Sean Tulin (York University), May 2021 – Sep. 2023

## **Professional Service**

### **Journal Referee and Guest Editor**

- **Journal Referee:** Journal of Cosmology and Astroparticle Physics, Physical Review Letters, Physical Review D, Monthly Notices of the Royal Astronomical Society, The European Physical Journal C, Galaxies, 2013 – Present
- **Guest Editor:** Special Issue in Universe: “The Nature of Dark Matter”, Jul. 2020 – Jul. 2021

### **Conference, School, and Colloquium Organizer and Convener**

- **Co-organizer** (with Saeed Rastgoo), EXPLORE 2023 Summer School, University of Alberta, Edmonton, AB, Canada, 28 Aug. – 1 Sep. 2023
- **Convener**, XVIII International Conference on Topics in Astroparticle and Underground Physics (TAUP) 2023, University of Vienna, Vienna, Austria, May 2023 – Present
- **Member**, Science Organizing Committee, Canadian Astronomical Society (CASCA) 2022, University of Waterloo, Waterloo, ON, Canada, Nov. 2021 – May 2022
- **Co-organizer** (with Claire David), Physics and Astronomy Colloquia, Department of Physics and Astronomy, York University, Toronto, ON, Canada, Sep. 2020 – Dec. 2021

- **Co-organizer**, 4th IBS-MultiDark-IPPP Workshop, Daejeon, South Korea, 7–11 Oct. 2019
- **Co-organizer**, weekly IPPP Seminars, IPPP, Durham University, Durham, UK, 2018–2019
- **Co-organizer** (with David Cerdeño), “Unravelling the dark matter mystery” workshop, IPPP, Durham University, Durham, UK, 12–16 Mar. 2018
- **Co-organizer** (with Annika Peter), TeVPA 2017, Mini-workshop on the Columbus-Amsterdam-Paris-Stockholm network, Columbus, OH, USA, 6 Aug. 2017
- **Organizer**, weekly “Amsterdark Meetings”, GRAPPA Institute, University of Amsterdam, Amsterdam, Netherlands, Oct. 2014 – Jun. 2017
- **Convener**, Dark Matter Direct Detection session, TeVPA 2016, CERN, Geneva, Switzerland, 12–16 Sep. 2016
- **Member**, Organization Committee, Invisibles13 Workshop and School, Durham, UK, 15–19 Jul. 2013

### Other Service

- **Member**, Graduate Recruitment Committee, Department of Physics, University of Alberta, Edmonton, AB, Canada, Oct. 2023 – Present
- **Member**, Physics representative on the Faculty of Science Graduate Mentoring Award Committee, University of Alberta, Edmonton, AB, Canada, Feb. 2023 – Present
- **Member**, Board of Trustees, Institute of Particle Physics, Canada, Jun. 2022 – Present
- **Member**, Scientific Management Committee, McDonald Institute, Queen’s University, Kingston, ON, Canada, Jan. 2022 – Present

### Professional Memberships

- Canadian Association of Physicists
- Institute of Particle Physics, Canada
- Canadian Astronomical Society

### Public Outreach

#### Public Talks

- “Dark matter: the hidden pillar of the cosmos”, public talk at the Edmonton Centre of the Royal Astronomical Society of Canada, 13 Mar. 2023
- “Hidden in plain sight: The elusive dark matter”, public (remote) talk at the Astronomy Speaker’s Night, David Dunlap Observatory, Royal Astronomical Society of Canada, 13 May 2022
- “Hunting for dark matter in our Galaxy”, public (remote) talk at the national symposium “Let’s Talk Astrophysics”, Canada, 20 Feb. 2021
- “Searching for the mysterious dark matter”, public (remote) talk at the Speaker’s Night Meeting of the Royal Astronomical Society of Canada, Toronto, 20 Jan. 2021
- “Dark Matter Direct Detection”, public talk at the Amsterdam Academic Club, Amsterdam, Netherlands, 22 Jan. 2015

## Other Activities

- Participation in the IPPP outreach activities on “Dark Matter Day”, Durham, UK, 31 Oct. 2017
- Participation in the outreach activities of the Invisibles network (including the website) as part of the visit to the Narcea Company, Madrid, Spain, 11–22 Nov. 2013
- “Dark Matter”, public poster presentation at the “Science and Art Event”, Durham, UK, 18 Jul. 2013

## Publications

### Peer-Reviewed Articles

1. A. Smith-Orlik, N. Ronaghi, **N. Bozorgnia**, M. Cautun, A. Fattahi, G. Besla, C. S. Frenk, N. Garavito-Camargo, F. Gómez, R. J. J. Grand, F. Marinacci and A. H. G. Peter, “The impact of the Large Magellanic Cloud on dark matter direct detection signals”, [arXiv:2302.04281 \[astro-ph.GA\]](#), *accepted for publication in J. Cosmol. Astropart. Phys.*
2. K. Blanchette, E. Piccirillo, **N. Bozorgnia**, L. E. Strigari, A. Fattahi, C. S. Frenk, J. F. Navarro and T. Sawala, “Velocity-dependent J-factors for Milky Way dwarf spheroidal analogues in cosmological simulations”, *J. Cosmol. Astropart. Phys.* **03**, 021 (2023), [arXiv:2207.00069 \[astro-ph.CO\]](#).
3. E. Rahimi, E. Vienneau, **N. Bozorgnia** and A. Robertson, “The local dark matter distribution in self-interacting dark matter halos”, *J. Cosmol. Astropart. Phys.* **02**, 040 (2023), [arXiv:2210.06498 \[astro-ph.CO\]](#).
4. E. Piccirillo, K. Blanchette, **N. Bozorgnia**, L. E. Strigari, C. S. Frenk, R. J. J. Grand and F. Marinacci, “Velocity-dependent annihilation radiation from dark matter subhalos in cosmological simulations”, *J. Cosmol. Astropart. Phys.* **08**, 058 (2022), [arXiv:2203.08853 \[astro-ph.CO\]](#).
5. E. Board, **N. Bozorgnia**, L. E. Strigari, R. J. J. Grand, A. Fattahi, C. S. Frenk, F. Marinacci, J. F. Navarro and K. A. Oman, “Velocity-dependent J-factors for annihilation radiation from cosmological simulations”, *J. Cosmol. Astropart. Phys.* **04**, 070 (2021), [arXiv:2101.06284 \[astro-ph.CO\]](#).
6. **N. Bozorgnia**, A. Fattahi, C. S. Frenk, A. Cheek, D. G. Cerdeño, F. A. Gómez, R. J. J. Grand and F. Marinacci, “The dark matter component of the Gaia radially anisotropic substructure”, *J. Cosmol. Astropart. Phys.* **07**, 036 (2020), [arXiv:1910.07536 \[astro-ph.GA\]](#).
7. **N. Bozorgnia**, A. Fattahi, D. G. Cerdeño, C. S. Frenk, F. A. Gómez, R. J. J. Grand, F. Marinacci and R. Pakmor, “On the correlation between the local dark matter and stellar velocities”, *J. Cosmol. Astropart. Phys.* **06**, 045 (2019), [arXiv:1811.11763 \[astro-ph.GA\]](#).
8. **N. Bozorgnia**, D. G. Cerdeño, A. Cheek and B. Penning, “Opening the energy window on direct dark matter detection”, *J. Cosmol. Astropart. Phys.* **12**, 013 (2018), [arXiv:1810.05576 \[hep-ph\]](#).
9. N. Banik, G. Bertone, J. Bovy and **N. Bozorgnia**, “Probing the nature of dark matter particles with stellar streams”, *J. Cosmol. Astropart. Phys.* **07**, 061 (2018), [arXiv:1804.04384 \[astro-ph.CO\]](#).

10. G. Bertone, **N. Bozorgnia**, J. S. Kim, S. Liem, C. McCabe, S. Otten and R. Ruiz de Austri, “Identifying WIMP dark matter from particle and astroparticle data”, *J. Cosmol. Astropart. Phys.* **03**, 026 (2018), [arXiv:1712.04793 \[hep-ph\]](#).
  11. **N. Bozorgnia** and G. Bertone, “Implications of hydrodynamical simulations for the interpretation of direct dark matter searches”, *Int. J. Mod. Phys. A* **32**, no. 21, 1730016 (2017), [arXiv:1705.05853 \[astro-ph.CO\]](#).
  12. M. Benito, N. Bernal, **N. Bozorgnia**, F. Calore and F. Iocco, “Particle Dark Matter Constraints: the Effect of Galactic Uncertainties”, *J. Cosmol. Astropart. Phys.* **02**, 007 (2017), [arXiv:1612.02010 \[hep-ph\]](#).
  13. **N. Bozorgnia**, G. B. Gelmini and P. Gondolo, “Inverted dipole feature in directional detection of exothermic dark matter”, *J. Cosmol. Astropart. Phys.* **01**, 052 (2017), [arXiv:1611.01750 \[astro-ph.CO\]](#).
  14. F. Mayet, A. M. Green, J. Battat, J. Billard, **N. Bozorgnia**, G. B. Gelmini, P. Gondolo, B. J. Kavanagh, S. K. Lee, D. Loomba, J. Monroe, B. Morgan, C. A. J. O’Hare, A. H. G. Peter, N. S. Phan and S. E. Vahsen, “A review on the discovery reach of directional dark matter detection”, *Physics Reports* **627**, 1–49 (2016), [arXiv:1602.03781 \[astro-ph.CO\]](#).
- Chosen as a *highlighted article* in *Physics Reports*.**
15. **N. Bozorgnia**, F. Calore, M. Schaller, M. Lovell, G. Bertone, C. S. Frenk, R. A. Crain, J. F. Navarro, J. Schaye and T. Theuns, “Simulated Milky Way analogues: implications for dark matter direct searches”, *J. Cosmol. Astropart. Phys.* **05**, 024 (2016), [arXiv:1601.04707 \[astro-ph.CO\]](#).
  16. M. Schaller, C. S. Frenk, T. Theuns, F. Calore, G. Bertone, **N. Bozorgnia**, R. A. Crain, A. Fattahi, J. F. Navarro, T. Sawala and J. Schaye, “Dark matter annihilation radiation in hydrodynamic simulations of Milky Way haloes”, *Mon. Not. R. Astron. Soc.* **455**, Issue 4, 4442–4451 (2015), [arXiv:1509.02166 \[astro-ph.CO\]](#).
  17. F. Calore, **N. Bozorgnia**, M. Lovell, G. Bertone, M. Schaller, C. S. Frenk, R. A. Crain, J. Schaye, T. Theuns and J. W. Trayford, “Simulated Milky Way analogues: implications for dark matter indirect searches”, *J. Cosmol. Astropart. Phys.* **12**, 053 (2015), [arXiv:1509.02164 \[astro-ph.GA\]](#).
  18. **N. Bozorgnia** and T. Schwetz, “What is the probability that direct detection experiments have observed dark matter?”, *J. Cosmol. Astropart. Phys.* **12**, 015 (2014), [arXiv:1410.6160 \[astro-ph.CO\]](#).
  19. **N. Bozorgnia** and T. Schwetz, “Is the effect of the Sun’s gravitational potential on dark matter particles observable?”, *J. Cosmol. Astropart. Phys.* **08**, 013 (2014), [arXiv:1405.2340 \[astro-ph.CO\]](#).
  20. **N. Bozorgnia**, R. Catena and T. Schwetz, “Anisotropic dark matter distribution functions and impact on WIMP direct detection”, *J. Cosmol. Astropart. Phys.* **12**, 050 (2013), [arXiv:1310.0468 \[astro-ph.CO\]](#).
  21. **N. Bozorgnia**, J. Herrero-Garcia, T. Schwetz and J. Zupan, “Halo-independent methods for inelastic dark matter scattering”, *J. Cosmol. Astropart. Phys.* **07**, 049 (2013), [arXiv:1305.3575 \[hep-ph\]](#).
  22. **N. Bozorgnia**, G. B. Gelmini and P. Gondolo, “Aberration features in directional dark matter detection”, *J. Cosmol. Astropart. Phys.* **08**, 011 (2012), [arXiv:1205.2333 \[astro-ph.CO\]](#).

23. **N. Bozorgnia**, G. B. Gelmini and P. Gondolo, “Ring-like features in directional dark matter detection”, *J. Cosmol. Astropart. Phys.* **06**, 037 (2012), [arXiv:1111.6361 \[astro-ph.CO\]](#).
24. **N. Bozorgnia**, G. B. Gelmini and P. Gondolo, “Daily modulation due to channeling in direct dark matter crystalline detectors”, *Phys. Rev. D* **84**, 023516 (2011), [arXiv:1101.2876 \[astro-ph.CO\]](#).
25. **N. Bozorgnia**, G. B. Gelmini and P. Gondolo, “Channeling in solid Xe, Ar and Ne direct dark matter detectors”, *Nucl. Instrum. Meth. A* **654**, 162 (2011), [arXiv:1011.6006 \[astro-ph.CO\]](#).
26. **N. Bozorgnia**, G. B. Gelmini and P. Gondolo, “Channeling in direct dark matter detection III: channeling fraction in CsI crystals”, *J. Cosmol. Astropart. Phys.* **11**, 029 (2010), [arXiv:1009.3325 \[astro-ph.CO\]](#).
27. **N. Bozorgnia**, G. B. Gelmini and P. Gondolo, “Channeling in direct dark matter detection II: channeling fraction in Si and Ge crystals”, *J. Cosmol. Astropart. Phys.* **11**, 028 (2010), [arXiv:1008.3676 \[astro-ph.CO\]](#).
28. **N. Bozorgnia**, G. B. Gelmini and P. Gondolo, “Channeling in direct dark matter detection I: channeling fraction in NaI (Tl) crystals”, *J. Cosmol. Astropart. Phys.* **11**, 019 (2010), [arXiv:1006.3110 \[astro-ph.CO\]](#).
29. S. Ahlen, N. Afshordi, J. B. R. Battat, J. Billard, **N. Bozorgnia et al.**, “The case for a directional dark matter detector and the status of current experimental efforts”, *Int. J. Mod. Phys. A* **25**, 1 (2010), [arXiv:0911.0323 \[astro-ph.CO\]](#).
30. **N. Bozorgnia**, J. J. Fortney, C. McCarthy, D. A. Fischer and G. W. Marcy, “The Search for an Atmospheric Signature of the Transiting Exoplanet HD 149026b”, *Publ. Astron. Soc. Pac.* **118**, 1249 (2006), [arXiv:astro-ph/0609513](#).

### Submitted Articles

- I. Santos-Santos, **N. Bozorgnia**, A. Fattahi and J. F. Navarro, “Are there any extragalactic high speed dark matter particles in the Solar neighborhood?”, [arXiv:2308.15388 \[astro-ph.GA\]](#), *submitted to J. Cosmol. Astropart. Phys.*

### Conference Proceedings

- S. Algeri, M. van Beekveld, **N. Bozorgnia et al.**, “Statistical challenges in the search for dark matter”, Workshop Report, DMStat workshop, Banff International Research Station for Mathematical Innovation and Discovery (BIRS), Banff, Alberta, Canada, 25 Feb. – 3 Mar. 2018, [arXiv:1807.09273 \[hep-ph\]](#).
- **N. Bozorgnia**, F. Calore, M. Schaller, M. Lovell, G. Bertone, C. S. Frenk, R. A. Crain, J. F. Navarro, J. Schaye and T. Theuns, “The Local Dark Matter Distribution from Hydrodynamic Simulations”, Proceedings, 12th Patras Workshop on Axions, WIMPs and WISPs (PATRAS 2016), Jeju Island, South Korea, 20–24 Jun. 2016, DESY-PROC, 14-17 (2017).
- F. Calore, **N. Bozorgnia**, M. Lovell, G. Bertone, M. Schaller, C. S. Frenk, R. A. Crain, J. Schaye, T. Theuns and J. W. Trayford, “The Fermi GeV excess: challenges for the dark matter interpretation”, *J. Phys.: Conf. Ser.* **718**, 042010 (2016).
- **N. Bozorgnia**, F. Calore, M. Schaller, M. Lovell, G. Bertone, C. S. Frenk, R. A. Crain, J. F. Navarro, J. Schaye and T. Theuns, “Predictions of hydrodynamic simulations for direct dark matter detection”, *J. Phys.: Conf. Ser.* **718**, 042007 (2016).



- **N. Bozorgnia**, “Daily modulation of the dark matter signal in crystalline detectors”, Proceedings, DPF-2011 Conference, Providence, RI, USA, 9–13 Aug. 2011, [arXiv:1109.0735](https://arxiv.org/abs/1109.0735) [astro-ph.IM].
- **N. Bozorgnia**, “Channeling effects in direct dark matter detectors”, J. Phys.: Conf. Ser. **315**, 012003 (2011), [arXiv:1009.5046](https://arxiv.org/abs/1009.5046) [astro-ph.CO].

## Thesis and Dissertation

- **PhD Dissertation**: “Ion Channeling in Direct Dark Matter Detection”, University of California, Los Angeles, Jun. 2012, <http://www.escholarship.org/uc/item/1125w4fr>.
- **Master’s Thesis**: “Atmospheric Features of Transiting Exoplanets”, San Francisco State University, May 2006.

## Talks and Presentations

### Plenary Talks

1. “The Large Magellanic Cloud and dark matter direct detection”, invited talk at the Center for Theoretical Underground Physics and Related Areas (CETUP\*) 2023 Workshop, The Institute for Underground Science at SURF, Lead, SD, USA, 28 Jun. 2023
2. “Mapping the dark matter in our Solar neighborhood”, invited talk at the “Hot Topics From Theory Made Accessible” Symposium, Canadian Association of Physicists (CAP) Congress, University of New Brunswick, Fredericton, NB, Canada, 20 Jun. 2023
3. “Dark matter: from cosmological simulations to particle detection”, invited talk at the Lake Louise Winter Institute, Lake Louise, AB, Canada, 20 Feb. 2023
4. “What are the effects of substructure or satellites on the local dark matter distribution?”, invited talk as part of a panel at the “New Horizons in Astro and Particle Theory” Workshop, Kingston, ON, Canada, 6 Aug. 2022
5. “Gaia anisotropic structure and direct detection”, invited talk at “The Local Dark Matter Distribution”, Durham University, Durham, UK, 3 Dec. 2019
6. “The dark matter component of the Gaia anisotropic substructure”, invited talk at the 4th IBS-MultiDark-IPPP Workshop, Daejeon, South Korea, 11 Oct. 2019
7. “The dark matter component of the Gaia sausage structure”, invited talk at “Searches, Theories, Results, Opportunities, and New ideas for sub-GeV Dark Matter” workshop, Erwin Schrödinger International Institute for Mathematics and Physics, Vienna, Austria, 6 Aug. 2019
8. “Identifying WIMPs from data and astrophysical uncertainties”, invited talk at “The Puzzle of Dark Matter - Assembling the Pieces” conference, DESY, Hamburg, Germany, 29 Oct. 2018
9. “Implications of hydrodynamical simulations for direct detection”, invited talk at the “Interdisciplinary approach to QCD-like composite dark matter” workshop, Trento, Italy, 4 Oct. 2018
10. “Probing the particle nature of dark matter with stellar streams”, invited talk at the UK Meeting on Dark Matter, IPPP, Durham, UK, 13 Jul. 2018

11. “Impact of simulation results for dark matter searches”, invited talk at the 14th international workshop DSU 2018, Annecy, France, 25 Jun. 2018
12. “From cosmological simulations to dark matter direct detection”, invited talk at the KITP conference “Dark matter detection and detectability: paradigm confirmation or shift?”, KITP, Santa Barbara, CA, USA, 3 May 2018
13. “Stellar streams as probes of the dark matter particle nature”, invited talk at the KITP workshop “The Small-Scale Structure of Cold(?) Dark Matter”, KITP, Santa Barbara, CA, USA, 26 Apr. 2018
14. “Cosmological simulations and dark matter direct detection”, invited talk at the UK Meeting on Dark Matter, Bristol, UK, 17 Jan. 2018
15. “Dark matter: from simulations to detection”, invited review talk at the UK HEP Forum “Cosmology, Gravitation and Particle Physics”, Abingdon, UK, 29 Nov. 2017
16. “How is Dark Matter distributed in our local neighborhood?”, invited talk at the Invisibles17 Workshop, Zurich, Switzerland, 14 Jun. 2017
17. “Astrophysical inputs for direct Dark Matter searches”, invited review talk at the Topical Workshop “Direct Dark Matter Detection: Experiment meets Theory”, Max Planck Institute for Astrophysics, Garching, Germany, 6 Mar. 2017
18. “Astrophysical effects on dark matter direct detection”, invited talk at the 3rd IBS-MultiDark-IPPP joint Workshop on “Dark Matter from aeV to ZeV”, Durham, UK, 23 Nov. 2016
19. “The local dark matter distribution from hydrodynamic simulations”, invited talk at the 12th PATRAS Workshop on Axions, WIMPS, and WISPS, Jeju Island, South Korea, 20 Jun. 2016
20. “Hydrodynamic simulations and dark matter direct detection”, invited talk at the international symposium “Revealing the history of the universe with underground particle and nuclear research”, University of Tokyo, Tokyo, Japan, 12 May 2016
21. “Review of dark matter direct detection”, invited review talk at the “Dark Matter in the Milky Way” workshop, MITP, Mainz, Germany, 2 May 2016
22. “The dark matter distribution as predicted by cosmological simulations”, invited talk at IPM school and conference on Particle Physics (IPP15), Tehran, Iran, 26 Sep. 2015
23. “How to quantify the compatibility of Dark Matter direct detection experiments”, invited talk at the Invisibles15 Workshop, Madrid, Spain, 22 Jun. 2015
24. “Direct Detection of Dark Matter”, invited talk at the Institute of Physics PhD/PostDoc-symposium, Amsterdam, Netherlands, 27 May 2015
25. “Dark matter direct detection mini-review”, invited review talk at the “Identification of Dark Matter with a Cross-Disciplinary Approach” workshop, Madrid, Spain, 29 Apr. 2015
26. “Dark matter direct detection with anisotropic halo models”, invited talk at IPP14, Tehran, Iran, 21 Sep. 2014
27. “Astrophysical uncertainties in WIMP direct detection”, invited talk at “Bright Ideas on Dark Matters” workshop, CP<sup>3</sup>-Origins, University of Southern Denmark, Odense, Denmark, 9 Apr. 2014
28. “Bounds on the dark matter annual modulation signal”, invited talk at IPP13: Flavor physics and dark matter, Tehran, Iran, 6 May 2013

29. “Ring-like and aberration patterns in directional dark matter detection”, invited talk at the Invisibles12 Workshop, GGI Florence, Italy, 24 Jun. 2012

## Seminars and Colloquia

1. “Dark matter: from cosmological simulations to underground searches”, Prairie Universities Physics Seminar Series, University of Winnipeg, Winnipeg, MB, Canada, 3 Nov. 2023
2. “Impact of the Large Magellanic Cloud on the local dark matter distribution”, Seminar, GRAPPA Institute, University of Amsterdam, Netherlands, 21 Jul. 2023
3. “Mapping the local dark matter distribution”, invited Particle Physics Seminar, Carleton University, Ottawa, ON, Canada, 1 May 2023
4. “Tracing the local dark matter distribution”, invited (remote) seminar, High Energy Physics Group, University of Toronto, Toronto, ON, Canada, 4 Nov. 2022
5. “Dark matter: from its galactic distribution to its detection”, invited seminar, Theoretical Physics Institute, University of Alberta, Edmonton, AB, Canada, 22 Sep. 2022
6. “Tracing the galactic dark matter distribution in simulations”, invited (remote) colloquium, TRIUMF, Vancouver, BC, Canada, 28 Oct. 2021
7. “Probing the Galactic dark matter distribution”, invited (remote) colloquium, University of Alberta, Edmonton, Alberta, Canada, 23 Aug. 2021
8. “The Galactic dark matter distribution from simulations”, invited (remote) Physics Theory Seminar, Washington University in St. Louis, St. Louis, MO, USA, 29 Apr. 2021
9. “Inferring the dark matter distribution from simulations and observations”, invited (remote) Gentner Colloquium, MPIK, Heidelberg, Germany, 14 Oct. 2020
10. “The dark matter distribution from simulations and observations”, invited (remote) seminar, Sharif University, Tehran, Iran, 26 Jul. 2020
11. “Inferring dark matter velocities from simulations and Gaia data”, invited colloquium, Perimeter Institute, Waterloo, Canada, 19 Feb. 2020
12. “The dark matter distribution from simulations and Gaia data”, invited seminar at the McDonald Institute, Queen’s University, Kingston, ON, Canada, 11 Feb. 2020
13. “The local dark halo from simulations and Gaia data”, invited seminar at the Particle Cosmology Group, University of Nottingham, Nottingham, UK, 15 Nov. 2019
14. “The dark matter distribution in the Solar neighbourhood”, invited seminar, RWTH Aachen University, Aachen, Germany, 18 Apr. 2019
15. “Probing the local dark matter velocity distribution”, invited TEPPAP Seminar, UCLA, Los Angeles, CA, USA, 8 Apr. 2019
16. “Probing the dark matter distribution in our Galaxy”, invited seminar, York University, Toronto, Canada, 22 Mar. 2019
17. “Hunting for dark matter: from simulations to direct detection”, invited Dalitz Seminar in Fundamental Physics, University of Oxford, Oxford, UK, 25 Oct. 2018
18. “The local dark matter distribution from simulations”, invited seminar, University of Birmingham, Birmingham, UK, 24 Oct. 2018

19. “Probing the dark matter distribution of Milky Way-like galaxies”, invited seminar, University of Edinburgh, Edinburgh, UK, 19 Oct. 2018
20. “The dark matter distribution of Milky Way-like galaxies”, invited seminar, STFC Rutherford Appleton Laboratory, Didcot, UK, 17 Oct. 2018
21. “The search for dark matter: from simulations to detection”, invited seminar, Institute of High Energy Physics, Austrian Academy of Sciences, Vienna, Austria, 18 Jul. 2018
22. “Implications of simulations for dark matter searches”, invited seminar, SHEP group, University of Southampton, Southampton, UK, 22 Jun. 2018
23. “Searching for dark matter: from simulations to detection”, invited colloquium, IPM, Tehran, Iran, 11 Apr. 2018
24. “Dark matter: from simulations to direct detection”, invited seminar, LUPM, Montpellier, France, 16 Mar. 2018
25. “The dark matter distribution from hydrodynamic simulations”, invited seminar, 3-PAC seminar series, Imperial College London, London, UK, 23 Feb. 2018
26. “The dark halo of Milky Way-like galaxies”, invited seminar, University College London, London, UK, 16 Feb. 2018
27. “Probing the Dark Matter distribution in our Galaxy”, invited seminar, University of New South Wales, Sydney, Australia, 5 Feb. 2018
28. “Overcoming astrophysical uncertainties in dark matter searches”, invited seminar, University of Utah, Salt Lake City, UT, USA, 25 Jan. 2018
29. “Tackling astrophysical uncertainties in dark matter searches”, invited seminar, California State University, Long Beach, CA, USA, 6 Feb. 2017
30. “Extracting the dark matter distribution from cosmological simulations”, invited seminar, Université libre de Bruxelles, Brussels, Belgium, 4 Nov. 2016
31. “Implications of galaxy formation on dark matter direct detection”, seminar, UC Irvine, Irvine, CA, USA, 23 Feb. 2016
32. “Probability that Dark Matter have been observed in direct detection experiments”, seminar, GRAPPA Institute, Amsterdam, Netherlands, 24 Nov. 2014
33. “Impact of astrophysical uncertainties on direct dark matter detection”, seminar, IFIC, Universitat de Valencia, Valencia, Spain, 20 Nov. 2013
34. “Direct dark matter detection and astrophysical uncertainties”, invited seminar, Institute for Theoretical Physics (IFT) UAM-CSIC, Madrid, Spain, 18 Nov. 2013
35. “Ion channeling and directional patterns in dark matter detection”, invited seminar, Universität Göttingen, Göttingen, Germany, 21 Nov. 2012
36. “Channeling and directional features in direct dark matter detection”, invited Particle Physics Seminar, Perimeter Institute, Waterloo, Canada, 6 Dec. 2011
37. “Channeling and daily modulation in direct dark matter detectors”, invited CCAPP Seminar, Ohio State University, OH, USA, 8 Feb. 2011
38. “Discussion of channeling in dark matter detection”, seminar, University of California, Irvine, CA, USA, 1 Dec. 2010

## Contributed Talks

1. “Effect of the Large Magellanic Cloud on dark matter direct detection”, talk at UCLA Dark Matter 2023, Los Angeles, CA, USA, 30 Mar. 2023
2. “Velocity-dependent dark matter annihilation from simulations”, talk at TeV Particle Astrophysics (TeVPA) 2022, Kingston, ON, Canada, 11 Aug. 2022
3. “Probing the correlation between stellar and dark matter velocity distributions”, talk at TeVPA 2018, Berlin, Germany, 27–31 Aug. 2018
4. “Astrophysical distribution of dark matter and direct detection implications”, talk at TeVPA 2017, Columbus, OH, USA, 10 Aug. 2017
5. “The dark matter distribution of simulated Milky Way-like galaxies”, talk at the Xth International Conference on the Interconnection between Particle Physics and Cosmology (PPC 2016), São Paulo, Brazil, 12 Jul. 2016
6. “Dark matter direct detection predictions from hydrodynamic simulations”, talk at UCLA Dark Matter 2016, Los Angeles, CA, USA, 18 Feb. 2016
7. “Implications of EAGLE simulations for dark matter direct detection”, talk at the Computational Cosmology workshop, Leiden, Netherlands, 14 Dec. 2015
8. “Implications of simulated Milky Way-like haloes for dark matter direct detection”, talk at TeVPA 2015, Kashiwa, Japan, 27 Oct. 2015
9. “Implications of hydrodynamic simulations for dark matter direct detection”, talk at Amsterdam-Paris-Stockholm (APS) 5th meeting, Stockholm, Sweden, 23 Sep. 2015
10. “Predictions of N-body simulations for direct dark matter detection”, talk at the 14th International Conference on Topics in Astroparticle and Underground Physics (TAUP), Torino, Italy, 7 Sep. 2015
11. “Post-processing numerical simulations with observational data”, talk at the “Dark Matter in the Milky Way” workshop, Amsterdam, Netherlands, 17 Mar. 2015
12. “Impact of Sun’s gravitational potential on dark matter signals”, talk at the Invisibles14 Workshop, Paris, France, 17 Jul. 2014
13. “Impact of anisotropic distribution functions on direct dark matter detection”, talk at Astroparticle Physics: a joint TeVPA/IDM conference, Amsterdam, Netherlands, 23 Jun. 2014
14. “Solar gravitational focusing and WIMP direct detection”, talk at the Nordita workshop “What is dark matter”, Stockholm, Sweden, 19 May 2014
15. “Analysis of direct dark matter detection data in a halo independent way”, talk at the IFT/UAM Dark Matter Meeting, Madrid, Spain, 21 Nov. 2013
16. “Relevance of astrophysics independent methods for inelastic dark matter”, talk at the TH Cosmo Coffee, CERN, Geneva, Switzerland, 16 Oct. 2013
17. “Halo-independent tests relevant for inelastic dark matter scattering”, talk at TAUP 2013, Asilomar, CA, USA, 11 Sep. 2013
18. “Astrophysics independent tests for inelastic dark matter scattering”, talk at the Invisibles13 School, Durham, UK, 10 Jul. 2013

19. “Features in directional dark matter detection”, talk at 2013 International Workshop on Baryon and Lepton Number Violation (BLV2013): From the Cosmos to the LHC, Heidelberg, Germany, 9 Apr. 2013
20. “Daily modulation of the dark matter signal in crystalline detectors”, talk at the Meeting of the Division of Particles and Fields of the American Physical Society (DPF 2011), Brown University, RI, USA, 12 Aug. 2011
21. “Searching for daily modulation in direct dark matter detectors”, talk at the Snowbird Workshop on Particle Astrophysics, Astronomy and Cosmology (SnowPAC 2011), Snowbird, UT, USA, 31 Jan. 2011
22. “Ion channeling in dark matter detection”, talk at the Dark Matter Discussion Group Meeting, Caltech, CA, USA, 12 Oct. 2010
23. “Channeling effects in direct dark matter detectors”, talk at the VI International Workshop on the Dark Side of the Universe (DSU 2010), Leon, Guanajuato, Mexico, 5 Jun. 2010
24. “Channeling in direct dark matter detection”, talk at SnowPAC 2010, Snowbird, UT, USA, 27 Mar. 2010

### Poster Presentations

- “The search for an atmospheric signature of the transiting exoplanet HD 149026b”, poster presentation at the 207th AAS Meeting, Washington, D.C., USA, Jan. 2006

## Research Visits and Conference Participation

### Research Visits

- Oskar Klein Centre for Cosmoparticle Physics, Stockholm University, Apr. 2014 – Sep. 2014
- CERN, Geneva, Switzerland, 1–26 Oct. 2013
- Universität Göttingen, Göttingen, Germany, 12 May – 14 Jun. 2013

### Conferences and Workshops

- “The Small-Scale Structure of Cold(?) Dark Matter” workshop, *invited key participant*, Kavli Institute for Theoretical Physics, Santa Barbara, CA, USA, 9 Apr. – 4 May 2018
- “DM-Stat: Statistical Challenges in the Search for Dark Matter” workshop, *invited key participant*, Banff International Research Station, Alberta, Canada, 25 Feb. – 3 Mar. 2018
- “Big data tools for physics and astronomy”, Amsterdam, Netherlands, 19 Jun. 2017
- 20th Symposium on Astroparticle Physics in the Netherlands, Berg en Dal, Netherlands, 26–27 Mar. 2015
- Veldhoven 2015, Veldhoven, Netherlands, 20–21 Jan. 2015
- Invisibles14 School, Paris, France, 8–13 Jul. 2014
- Nordita workshop “What is the Dark Matter?”, Nordita, Stockholm, Sweden, 5–30 May 2014
- Invisibles13 Workshop, Durham, UK, 15–19 Jul. 2013

- Helmholtz Alliance for Astroparticle Physics (HAP) Dark Matter 2013, Universität Münster, Münster, Germany, 18–20 Feb. 2013
- 19th International Conference on General Relativity and Gravitation (GR19), Mexico City, Mexico, 5–9 Jul. 2010
- Cygnus 2009 “Directional Dark Matter Detection” workshop, MIT, Boston, MA, USA, 11–13 Jun. 2009
- SnowPAC 2009, Snowbird, UT, USA, Feb. 2009

## References

- Professor Graciela B. Gelmini (Ph.D. advisor)  
Department of Physics and Astronomy  
University of California, Los Angeles  
475 Portola Plaza  
Los Angeles, CA 90095, USA  
Phone: +1 310 825 4293  
Email: gelmini@physics.ucla.edu
- Professor Carlos S. Frenk  
Institute for Computational Cosmology  
Department of Physics  
Durham University  
Durham, DH1 3LE, UK  
Phone: +44 191 33 43641  
Email: c.s.frenk@durham.ac.uk
- Professor Gianfranco Bertone  
GRAPPA Institute  
University of Amsterdam  
Science Park 904  
1098 XH Amsterdam, Netherlands  
Phone: +31 20 525 7658  
Email: g.bertone@uva.nl
- Professor Louis E. Strigari  
Department of Physics and Astronomy  
Mitchell Institute for Fundamental Physics and Astronomy  
Texas A&M University  
College Station  
Texas 77843, USA  
Phone: +1 979 845 7778  
Email: strigari@tamu.edu
- Professor Julio F. Navarro  
Department of Physics and Astronomy  
University of Victoria  
3800 Finnerty Road  
Victoria, BC V8P 5C2, Canada  
Phone: +1 250 721 6644  
Email: jfn@uvic.ca

- Professor Thomas Schwetz  
Institute for Nuclear Physics  
Karlsruhe Institute of Technology  
Postfach 3640  
D-76021 Karlsruhe, Germany  
Phone: +49 721 60823504  
Email: schwetz@kit.edu