

# CARA GIOVANETTI

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## RESEARCH INTERESTS

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Beyond-Standard-Model Phenomenology, Big Bang Nucleosynthesis, Computational Methods, Dark Matter and Astroparticle Phenomenology, Particle Cosmology

## EDUCATION

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### New York University

New York, NY 10003

*Center for Cosmology and Particle Physics*

Ph.D., Physics

Aug. 2020 – May 2025

Thesis: Cosmology, Astrophysics, and Computation to Advance the  
Detection Prospects of Dark Matter

Advisor: Ken Van Tilburg

### Princeton University

Princeton, NJ 08544

A.B., Physics

Sep. 2016 – Jun. 2020

Senior Thesis: Cosmological Constraints on Sub-GeV Dark Matter

Advisor: Mariangela Lisanti

## FELLOWSHIPS, AWARDS, AND HONORS

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- James Arthur Grant Associate (JAGA) Fellowship, *NYU Physics* AY 2024-2025  
*A competitive research assistantship for students working with Center for Cosmology and Particle Physics (CCPP) faculty. Selection reflects CCPP appreciation for the quality and promise of recipient's work.*
- Outstanding Graduate Student Instructor Award, *NYU Physics* 2024  
*This award recognizes graduate student instructors for their exceptional contribution to teaching some of the department's most challenging and demanding courses.*
- [Graduate Research Fellowship](#), *National Science Foundation* Tenure 2020 – 2023  
*Recognizes and supports outstanding graduate students in NSF-supported science, technology, engineering, and mathematics disciplines who are pursuing research-based master's and doctoral degrees at accredited United States institutions.*
- [Dean's Doctoral Fellowship](#), *New York University* 2020  
*Fellowship awarded to a small number of NYU doctoral students expected to contribute to an intellectually challenging and inclusive educational environment.*
- [LeRoy Apker Award](#) Finalist, *American Physical Society* 2020  
*Recognizes outstanding achievements in physics by undergraduate students.*
- Allen G. Shenstone Prize in Physics, *Princeton University* 2019  
*Given to outstanding Physics undergraduates who have shown excellence in course work and promise in independent research.*

- Bell Burnell Fellowship, *Princeton University*  
Summer research fellowship awarded to encourage pursuit of physics.

2017, 2018

## PUBLICATIONS



6. C. Giovanetti, R. Lasenby, K. Van Tilburg (2024). *Orbital Dynamics of the Solar Basin*. *J. High Energ. Phys.* **2024**, 7 (2024). [[arXiv:2408.16041](#)]
5. C. Giovanetti, M. Lisanti, H. Liu, S. Mishra-Sharma, J. T. Ruderman (2024). *Cosmological Parameter Estimation with a Joint-Likelihood Analysis of the Cosmic Microwave Background and Big Bang Nucleosynthesis*. [[arXiv:2408.14531](#)]
4. C. Giovanetti, M. Lisanti, H. Liu, S. Mishra-Sharma, J. T. Ruderman (2024). *LINX: A Fast, Differentiable, and Extensible Big Bang Nucleosynthesis Package*. [[arXiv:2408.14538](#)]
3. C. Giovanetti, M. Schmaltz, N. Weiner (2024). *Neutrino-Dark Sector Equilibration and Primordial Element Abundances*. *Phys. Rev. D* **111**, 043526. [[arXiv:2402.10264](#)]
2. C. Giovanetti, M. Lisanti, H. Liu, J. T. Ruderman (2021). *Joint CMB and BBN Constraints on Light Dark Sectors with Dark Radiation*. *Phys. Rev. Lett.* **129**, 021302. [[arXiv:2109.03246](#)]
1. L. Lancaster, C. Giovanetti, P. Mocz, Y. Kahn, M. Lisanti, D. N. Spergel (2020). *Dynamical Friction in a Fuzzy Dark Matter Universe*. *Journal of Cosmology and Astroparticle Physics*, 2020(01). [[arXiv:1909.06381](#)]

## SEMINARS AND CONFERENCE TALKS

- Sydney Consortium for Particle Physics and Cosmology Remote, Feb. 2025
- Fermilab Theoretical Physics Seminar Batavia, IL, Nov. 2024
- McGill Theory HEP Seminar Montreal, QC, Nov. 2024
- University of Washington Particle Theory Seminar Seattle, WA, Nov. 2024
- MIT Center for Theoretical Physics Seminar (informal) Boston, MA, Nov. 2024
- Stanford Institute for Theoretical Physics Wine and Cheese Seminar Stanford, CA, Oct. 2024
- Berkeley Center for Theoretical Physics Particle Seminar Berkeley, CA, Oct. 2024
- Perimeter Institute Particle Physics Seminar Waterloo, ON, Oct. 2024
- University of Maryland Elementary Particle Theory Seminar College Park, MD, Sep. 2024
- Simons Foundation CCA PACMAN Seminar New York, NY, Mar. 2024  
Center for Computational Astrophysics, Particle Astrophysics and Cosmology Meeting Around New York
- Simons Foundation CCA PACMAN Seminar New York, NY, Oct. 2021  
Center for Computational Astrophysics, Particle Astrophysics and Cosmology Meeting Around New York
- Princeton Pheno & Vino Princeton, NJ, Feb. 2020

## TEACHING EXPERIENCE

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- Quantum Field Theory I, Teaching Assistant Fall 2023  
*Developed inclusive teaching strategies and active learning techniques to lead one recitation each week.*
- Quantum Field Theory I, Grader Fall 2023
- “Quarks to Cosmos”, Laboratory Instructor Fall 2021

## SCHOOLS, WORKSHOPS, AND EXTERNAL TRAINING

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- JAXtronomy Workshop, Simons Foundation CCA New York, NY  
Center for Computational Astrophysics Oct. 2024
- Dark Matter in the Era of Large Surveys, KITP Santa Barbara, CA  
*Workshop participant, affiliate* May – Jun. 2024
- APS JNIPER Fellow Remote  
Joint Network for Informal Physics Education and Research Jan. – May 2024
- APS Science Trust Project Misinformation Workshop Remote  
*Workshop participant* Aug. – Sep. 2023
- APS JNIPER Community Engagement Workshop Remote  
Joint Network for Informal Physics Education and Research Jun. – Jul. 2023  
*Workshop participant*
- Lighting New Lampposts for DM and BSM, Stony Brook University Stony Brook, NY  
*Workshop participant* Feb. – Mar. 2023
- NYU Science Podcasting Workshop Series New York, NY  
*Workshop participant* Oct. – Nov. 2022
- TASI, University of Colorado Boulder Boulder, CO  
Theoretical Advanced Study Institute in Elementary Particle Physics Jun. – Jul. 2022  
*Summer Student*
- NYU Advanced Science Communication Workshop Series New York, NY  
*Workshop participant* Apr. – May 2022
- NYU Science Communication Workshop Series New York, NY  
*Workshop participant* Sep. – Nov. 2021

## INTERNAL ORGANIZING

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- *Co-Chair*, NYU CU\*IP Organizing Committee 2024 – 2025  
Conference for Undergraduate Women and Gender Minorities in Physics  
*Conference name changed by APS part way through organizing process*
- *Chair*, NYU CUWiP Application Committee 2023  
Conference for Undergraduate Women in Physics
- *Member*, NYU G-PHORCE Equity and Inclusion Committee 2020 – 2021  
Graduate Physics Organization for Research, Culture, and Education

## BROADER IMPACTS AND COMMUNITY ENGAGEMENT

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- *Author*, [Vera Rubin: A Journey from Self-Doubt to Galactic Discoveries](#), Sep. 2024  
APS PhysicsQuest 2010, “Force and Motion”
- *Author*, [Why Do So Many Physics Students Want to Work in Academia?](#), Sep. 2024  
APS News “The Back Page”
- *Speaker*, [Liberty Science Center Space Talk](#) Jersey City, NJ, Aug. 2024  
“*Dark Matter is Right Next to You*”
- *Speaker*, [Astronomy on Tap at Pete’s Candy Store](#) New York, NY, Jun. 2024  
“*The Big Bang*”
- *Speaker*, TELL GSAS Sciences (NYU) New York, NY, Apr. 2024  
“*Dark Matter is Right Next to You*”
- *Author*, [Did Neurons Evolve Twice?](#), Scientific American Jan. 2024
- *Speaker*, Cosmic Happy Hour at [Book Club](#) New York, NY, Apr. 2023  
“*Dark Matter*”
- *Guest*, [The Academic Minute Podcast](#) Nov. 2022  
“*Dark Matter*”  
*Most listened-to segment of 2022*
- *Speaker*, Marion E. McKeown Elementary School STEM Day Newton, NJ, Oct. 2022  
“*Problem Solving with Physics*”
- *Guest*, [NSF Discovery Files Podcast](#) Aug. 2022  
“*Dark Matter*”
- *Scientist Mentor*, NY Academy of Sciences ASMP New York, NY, Jan. – May 2022  
Afterschool Science Mentorship Program