

CARA GIOVANETTI

726 Broadway, Office 1041, New York, NY 10003

RESEARCH INTERESTS

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

EDUCATION

New York University

New York, NY 10003

Center for Cosmology and Particle Physics

Ph.D., Physics

Aug. 2020 – Jun. 2025

Thesis: Dark matter Signatures from the Early Universe and
from the Present

Advisor: Ken Van Tilburg

Relevant Coursework: QFT I, II and III; Early Universe Cosmology;
Phase Transitions; Particle Physics; Beyond the Standard
Model; Cosmology; Statistics and Data Science

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

- 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* 2017, 2018
Summer research fellowship awarded to encourage pursuit of physics.

PUBLICATIONS



6. C. Giovanetti, R. Lasenby, K. Van Tilburg (2024). *Orbital Dynamics of the Solar Basin*. [[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*. [[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

Includes upcoming scheduled seminars.

- 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
- Johns Hopkins University Seminar (informal) Baltimore, MD, Oct. 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
- Cosmology From Home (Parallel Talk) Remote, Mar. 2024
- Simons Foundation CCA PACMAN Seminar New York, NY, Mar. 2024
Center for Computational Astrophysics, Particle Astrophysics and Cosmology Meeting Around New York
- Perimeter Institute Seminar (informal) Waterloo, ON, Jul. 2023
- Simons Foundation CCA PACMAN Seminar New York, NY, Oct. 2021
Center for Computational Astrophysics, Particle Astrophysics and Cosmology Meeting Around New York

- APS April Meeting (Parallel Talk) Remote, Apr. 2021
- Princeton Pheno & Vino Princeton, NJ, Feb. 2020

TEACHING EXPERIENCE

- 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

- 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

- *Co-Chair*, NYU CU*iP Organizing Committee 2024 – Present
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
- *Member*, Princeton Physics Climate and Inclusion Committee 2019 – 2020

BROADER IMPACTS AND COMMUNITY ENGAGEMENT

- *Author*, [Why Do So Many Physics Students Want to Work in Academia?](#), APS News “The Back Page” Sep. 2024
- *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