

Mitchell Karmen

Johns Hopkins University
Department of Physics and Astronomy

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Education

Johns Hopkins University
Ph.D. Astrophysics

Baltimore, MD
Fall 2022–Present

New York University
B.A. Physics

New York, NY
2016–2020

Additional Education

- GROWTH Multi-Wavelength Astronomy Summer School 2020
- Center for Computational Astrophysics Data Analysis Bootcamp 2018–2019

Research Positions

Transient Science @ Space Telescope Science Institute
Advisor: Suvi Gezari
Detecting tidal disruption events in the early universe

Graduate Research Assistant
Fall 2022–Present

Supernova Cosmology Project, Lawrence Berkeley National Laboratory
Research Assistant
Advisor: Saul Perlmutter
Standardizing Type Ia Supernova Spectral Time Series with Neural Networks

Berkeley, CA
Spring 2021–Summer 2022

Center for Computational Cosmology
DOE Science Undergraduate Laboratory Intern
Advisor: Peter Nugent
Using convolutional neural networks to investigate SN Ia detonation mechanisms

Berkeley, CA
Fall 2020–Spring 2021

Black Hole Working Group, Zwicky Transient Facility
Scientific Software Developer
Advisor: Sjoert van Velzen
Main programmer for the ZTF tidal disruption event detection and analysis pipeline

New York, NY
Summer 2020

NYU Center for Cosmology and Particle Physics
Undergraduate Researcher
Advisors: Glennys Farrar, Sjoert van Velzen
Creating an all-sky catalog of compact galaxies

New York, NY
2019–2020

Publications

- *A Probabilistic Autoencoder for Type Ia Supernovae Spectral Time Series*
Stein, G., et al., ApJ (2022)
- *Bump Morphology of the CMAGIC Diagram*
Aldoroty, L., et al., Submitted to AJ (2022)

In Preparation

- *Extending the Twins Embedding to Correct Type Ia Supernova Peak Magnitudes with Single Spectra at Any Phase*
Karmen, M., The Nearby Supernova Factory, In Preparation to submit to ApJ (2023)

Awards and Grants

George Granger Brown Award NYU Department of Physics	2020
Dean's Conference Grant NYU Dean's Undergraduate Research Fund	2020
Collegiate Research Scholar NYU College of Arts and Sciences	2019
DURF Grant NYU Deans Undergraduate Research Fund	2019
Research+ Scholar NYU College of Arts and Sciences	2018

Outreach and Leadership

Volunteer Mentor Berkeley Lab Director's Apprenticeship Program	2021–Present
Mentor Tampa Heights Junior Civic Association	2021
NYU Society of Physics Students President	2019–2020
Volunteer Instructor BioBus	2019–2020
Lead Organizer NYU Physics Mentorship Program	2019–2020
NYU Society of Physics Students Treasurer	2017–2018

Conferences and Talks

- 1: *Extending the Twins Embedding for Use by the Roman/WFIRST Supernova Survey*
Contributed Talk, Roman Science Team Community Briefing, Virtual (2021)
- 2: *Investigating the Variability of Type Ia Supernovae Using Deep Learning*
Poster, LBNL Spring Intern Poster Session, Virtual (2021)
- 3: *Unsupervised Clustering of Type Ia Supernova Light Curves*
Poster, LBNL Fall Intern Poster Session, Virtual (2020)
- 4: *A New All-Sky Catalog of Compact Galaxies*
Poster, American Astronomical Society Meeting 235, Honolulu, HI (2020)
- 5: *A New All-Sky Catalog of Compact Galaxies: Opportunities for Electromagnetic Transient Follow-Up*
Poster, Gotham AstroFest, New York, NY (2019)
- 6: *Finding Exoplanets in Strange Orbits*
Contributed Talk, NYU Undergraduate Research Symposium, New York, NY (2018)

Teaching

Teaching Assistant Johns Hopkins University	2022–2023
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- Planets, Life, and the Universe
- General Physics Lab I
- General Physics Lab II

Departmental Tutor
New York University

Fall 2018–Spring 2020

- General Physics I: Kinematics
- General Physics II: Electricity and Magnetism

7th Grade Mathematics Classroom Tutor
America Reads / America Counts

Fall 2017–Spring 2018

- Assisted a middle school math teacher with classroom activities
- Tutored one-on-one with students struggling in mathematics