Abigail Polin, PhD

Carnegie Observatories
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Education

Ph.D. in Physics May 2020
University of California, Berkeley
Advisors: Peter Nugent & Daniel Kasen
Thesis: *Pushing the Helium Envelope: Signatures of Normal and Unusual Supernovae from Sub-Chandrasekhar Mass White Dwarf Explosions*

M.S. in Physics May 2015
University of California, Berkeley

B.S. in Physics *Cum Laude* December 2012
New York University

Research Appointments

Joint Postdoctoral Research Fellow:
CTAC Fellowship, Carnegie Observatories 2020-Present
Burke Fellowship in Theoretical Physics, Caltech 2020-Present

NSF Graduate Research Fellow
University of California, Berkeley 2015-2020

Fellowships & Awards

Burke Fellowship in Theoretical Physics, Caltech 2020-Present
CTAC Fellowship, Carnegie Observatories 2020-Present

– GRAD –

NSF Graduate Research Fellowship 2015-2020
Wonderfest Science Envoy 2019-2020
Berkeley Connect Fellowship 2014-2016
Outstanding Graduate Student Instructor Award, UC Berkeley 2014

— UNDERGRAD —

National Society for Physics Students and the American Institute of Physics: SPS Leadership Scholarship 2012
George Granger Brown Scholarship, New York University 2012
New York University Undergraduate Research Conference Winner 2012
Sigma Pi Sigma, National Physics Honor Society Member 2011
President, New York University Society for Physics Students 2011-2013
New York University Collegiate Research Scholar 2011
The Dean's Undergraduate Research Fund Recipient, New York University 2011

Publications

Publication Summary: 10 published journal articles, 2 as first author, 4 identifying supernovae discoveries that matched our theoretical predictions

1. *Nebular Models of Sub-Chandrasekhar Mass Type Ia Supernovae: Clues to the Origin of Ca-rich Transients*
   Polin, A., P. E. Nugent, and D. Kasen
   The Astrophysical Journal, 906, 65 (2021)

2. *Observational Predictions for Sub-Chandrasekhar Mass Explosions: Further Evidence for Multiple Progenitor Systems for Type Ia Supernovae*
   Polin, A., P. E. Nugent, and D. Kasen
   The Astrophysical Journal, 873, 84 (2019)

3. *The Zwicky Transient Facility Census of the Local Universe I: Systematic search for Calcium rich gap transients reveal three related spectroscopic sub-classes*
   De, Kishalay, and 49 colleagues including **A. Polin**
   The Astrophysical Journal, 905, 58 (2020).

4. *ZTF Early Observations of Type Ia Supernovae. III. Early-time Colors As a Test for Explosion Models and Multiple Populations*
   Bulla, M. and 24 colleagues including **A. Polin**
   The Astrophysical Journal, 902, 1, 48 (2020)

5. *Strong Calcium Emission Indicates that the Ultraviolet-flashing SN Ia 2019yvq Was the Result of a Sub-Chandrasekhar Mass Double-detonation Explosion*
   Siebert, M. R.; G. Dimitriadis, **A. Polin**, and R. J. Foley
   The Astrophysical Journal Letters, 900, 2, L27, (2020)

6. *The Spectacular Ultraviolet Flash from the Peculiar Type Ia Supernova 2019yvq*
   Miller, A. A., M. R. Magee, **A. Polin**, and 42 colleagues
   The Astrophysical Journal, 898, 1, 56 (2020)

7. *Ca hnk: The Calcium-rich Transient Supernova 2016hnk from a Helium Shell Detonation of a Sub-Chandrasekhar White Dwarf*
   Jacobson-Galán, W., **A. Polin**, R. J. Foley, and 11 colleagues
   The Astrophysical Journal, 896, 2, 165 (2020)

8. *ZTF 18aaqeasu (SN 2018byg): A Massive Helium-shell Double Detonation on a Sub-Chandrasekhar Mass White Dwarf*
   De, K., M. Kasliwal, **A. Polin**, and 27 colleagues
   The Astrophysical Journal Letters, 873, L18 (2019).

9. *K2 Observations of SN 2018oh Reveal a Two-Component Rising Light Curve for a Type Ia Supernova*
   Dimitriadis G., R. J. Foley, A. Rest, D. Kasen, A. L. Piro, **A. Polin**, and 144 colleagues
   The Astrophysical Journal Letters, 870L, 1D (2019)

10. *Gravitational Wave Hotspots: Ranking Potential Locations of Single-Source Gravitational Wave Emission*
    Simon J., **A. Polin**, A. Lommen, B. Stappers, L.S. Finn, F. Jenet and B. Christy
    The Astrophysical Journal, 784, 60 (2014)

Invited Talks & Conference Proceedings:

INVITED

Purdue University, Astronomy Seminar	Feb 2021
Florida State University, Astronomy Seminar	Nov 2020
Stony Brook University, Astronomy Seminar	Oct 2020
Harvard University, Galaxy and Cosmology Seminar	Dec 2019
Northwestern University, Observational Astronomy Seminar	Nov 2019
UC Santa Barbara, Astronomy Lunch Talk	Nov 2019
UC Santa Cruz, Astronomy FLASH Talk	Oct 2019
Caltech, Astronomy Tea Talk	Oct 2019
Carnegie Observatories, Lunch Talk	Oct 2019
ZTF Theory Network Meeting	Sept 2019
Haverford College, Physics and Astronomy Colloquium	Sept 2019
Texas A&M, Cook's Branch Supernova Workshop	Mar 2019
KITP, UC Santa Barbara, ZTF Theory Network December Meeting	Dec 2018
UC Santa Cruz, Pre-Filippenkopalooza Supernovae Meeting	Aug 2018
KITP, UC Santa Barbara, ZTF Theory Network Summer Meeting	Aug 2018
Weizmann Institute of Science, Particle Physics and Astrophysics Workshop	Dec 2017
New York University, CCPP Astrophysics Seminar	May 2017
University of Wisconsin, Milwaukee, Astronomy Seminar	Mar 2013

CONTRIBUTED

AAS Dissertation Talk, Winter Meeting, Honolulu, HI	Jan 2020
Midwest Workshop on Supernovae and Transients, Ohio State	Sept 2019
The Beginnings and Ends of Double White Dwarfs, DARK, Copenhagen	July 2019
UC Berkeley, Theoretical Astrophysics Seminar	Jan 2018
Supernovae: The LSST Revolution Workshop, Northwestern	May 2017
APS March Meeting, Baltimore, MD	Mar 2013
APS March Meeting, Houston TX	Mar 2011

Teaching Experience

Instructor (UC Berkeley)

Astro 9: Introduction to Scientific Computing	Summer 2020

Head Graduate Student Instructor (UC Berkeley)

Physics 7A: Introductory Mechanics	Spring 2014

Graduate Student Instructor (UC Berkeley)

Astro C10: Introduction to General Astronomy	Fall 2019
Astro 7A: Introduction to Astrophysics	Fall 2017
Astro 250: Introduction to High Performance Computing	Spring 2017
Physics 7A: Introductory Mechanics	Fall 2013

Adjunct Instructor (New York University)

Observational Astronomy	Spring 2013

Undergraduate Teaching Assistant (New York University)

Physics I & II for Physics Majors	2011-2012
General Physics I & II	2010-2012

Outreach & Service

Public Talks

Wonderfest Science Series, Virtual Talk — Jan 2021
Radio Interview: Women in STEM w/ KPOO-FM — Mar 2020
Wonderfest Science Envoy Talk: Verdi Club, San Francisco, CA — Feb 2020
Berkeley Art Museum and Pacific Film Archive, Berkeley, CA — Nov 2018

Leadership Positions

Wonderfest Science Envoy — 2019-2020
A program funded by the Gordon and Betty Moore Foundation, which identifies PhD students who show particular science-popularization promise. The programhelps us to develop the subtle art and science of public outreach. The program's participants emerge as articulate Science Envoys.

UC Berkeley Society for Women in the Physical Sciences:
Astronomy Coordinator — Fall 2015 - Spring 2019
Mentoring Coordinator — Fall 2014 - Spring 2016

Berkeley Connect Fellow — Fall 2014-Spring 2017
Berkeley Connect is a teaching and mentorship program intended to strengthen the relationship between undergraduate students and the Physics Department. As a Fellow, I helped design the curriculum, led class meetings, and mentored students one-on-one.

Respect is Part of Research: Founding Member and Peer Facilitator — 2014 - 2016
RPR is a graduate student group that runs annual peer-led sexual assault and sexual harassment prevention workshops for incoming first-year graduate students. RPR's primary mission is to create a respectful, positive working environment where everyone can do their best science.

Compass Program Organizer/Instructor — Summer 2014
The Berkeley Compass Project is a Physics graduate student-run organization that aims to improve the experiences of undergraduate students from under-represented groups interested in STEM.

References

Dr. Peter Nugent
LBNL
penugent@lbl.gov

Prof. Daniel Kasen
UC Berkeley
kasen@berkeley.edu

Prof. Ryan Foley
UC Santa Cruz
foley@ucsc.edu