

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: <i>Pushing the Helium Envelope: Signatures of Normal and Unusual Supernovae from Sub-Chandrasekhar Mass White Dwarf Explosions</i>	
M.S. in Physics	May 2015
University of California, Berkeley	
B.S. in Physics <i>Cum Laude</i>	December 2012
New York University	

RESEARCH APPOINTMENTS

Joint Postdoctoral Research Fellow	2020-Present
CTAC Fellowship, Carnegie Observatories	
Burke Fellowship in Theoretical Physics, Caltech	
NSF Graduate Research Fellow	2015-2020
University of California, Berkeley	

FELLOWSHIPS & AWARDS

	NERSC Early Career Award: High Impact Scientific Achievement	2021
	Burke Fellowship in Theoretical Physics, Caltech	2020-Present
	CTAC Fellowship, Carnegie Observatories	2020-Present
—	NSF Graduate Research Fellowship	2015-2020
—	Wonderfest Science Envoy	2019-2020
—	Berkeley Connect Fellowship	2014-2016
—	Outstanding Graduate Student Instructor Award, UC Berkeley	2014

COMPUTING GRANTS & AWARDED TELESCOPE TIME (ALL PI-ED)

NERSC ERCAP: perlmutter	15,000 GPU node-hours
NERSC ERCAP: cori	1,156,000 CPU-hours
XSEDE XRAC: stampede2	3,060,000 CPU-hours
XSEDE Startup: stampede2	108,800 CPU-hours
Las Campanas Observatory – Magellan: Clay 6.5m telescope	
— LDSS3 Spectrograph	2 nights (2021B)

PUBLICATIONS

PUBLICATION 10 published journal articles, 2 as first author, 4 identifying supernovae
SUMMARY discoveries that matched our theoretical predictions (87 first author citations)

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 2016hmk 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 18aaqasu (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	NBIA Workshop Radiation Transfer in Astrophysics, Niels Bohr Institute	June 2022
	Lawrence Berkeley National Lab, NERSC Awards Seminar Series	Nov 2021
	UC Davis, Physics & Astronomy Seminar	Apr 2021
	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

ADJUNCT 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

LEADERSHIP, 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

Carnegie Postdoc Representative	2021-2022
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CASSI Science Mentor	Summer 2021
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CASSI is a 10 week internship and educational program at Carnegie designed to improve undergraduate students' fluency with research and communication.

Wonderfest Science Envoy	2019-2020
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A program funded by the Gordon and Betty Moore Foundation, which identifies PhD students who show particular science-popularization promise. The program helps 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
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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
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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
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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.