

# Abigail Polin, PhD

Carnegie Observatories  
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## EDUCATION

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<b>Ph.D. in Physics</b>	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>	
<b>M.S. in Physics</b>	May 2015
University of California, Berkeley	
<b>B.S. in Physics</b>	December 2012
New York University	

## RESEARCH APPOINTMENTS

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

## FELLOWSHIPS & AWARDS

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- GRAD -	<b>NERSC Early Career Award: High Impact Scientific Achievement</b>	2021
	Burke Fellowship in Theoretical Physics, Caltech	2020-Present
	Carnegie 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 (PI-ED)

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### National Energy Research Scientific Computing Center (NERSC):

ERCAP 2022:

Perlmutter GPUs ..... 15,000 node-hours

Cori KNL CPUs ..... 1,156,000 core-hours

NERSC Early Career Award 2021: Early Access to the Perlmutter GPU Supercomputer

### NSF Extreme Science and Engineering Discovery Environment (XSEDE):

XRAC 2021: Stampede2 CPUs ..... 3,060,000 core-hours

Startup Allocation: Stampede2 CPUs ..... 108,800 core-hours

## AWARDED TELESCOPE TIME (PI-ED)

**Las Campanas Observatory:**

Magellan: Baade 6.5m telescope	
— IMACS Optical & FIRE NIR Spectrographs .....	4 nights (2022B)
.....	4 nights (2022A)
Magellan: Clay 6.5m telescope	
— LDSS3 Optical Spectrograph .....	2 nights (2021B)

## INVITED TALKS &amp; CONFERENCE PROCEEDINGS:

INVITED	University of Delaware, Physics and Astronomy Colloquium	Oct 2022
	Chandra Workshop: Supernova Remnants and their Progenitors	Aug 2022
	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	NASA TDAMM Workshop, Anapolis MD	Aug 2022
	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

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MENTORSHIP: ADVISING STUDENT RESEARCH

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## GRADUATE STUDENTS

Peter Scherbak (Caltech)  
Margot Fitz Axen (UT Austin, DOE CSGF Fellow)

## UNDERGRADUATE STUDENTS

Desiree Harvell (CASSI Summer Student: California State University, San Bernardino)  
Siddharth Boyeneni (Caltech SURF: Caltech)  
Hayden Campos (CASSI Summer Student: Dartmouth)

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TEACHING EXPERIENCE

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## ADJUNCT INSTRUCTOR (UC Berkeley)

Astro 9: Introduction to Scientific Computing Summer 2020  
*Sole Instructor: in charge of syllabus design and instruction*

## 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

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LEADERSHIP, OUTREACH & SERVICE

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## PUBLIC TALKS

Astronomy on Tap, Pasadena CA Oct 2022  
Wonderfest Science Series, Virtual Talk Jan 2021  
Radio Interview: Women in STEM w/ KPOO-FM Mar 2020  
Wonderfest Science Envoy Speaks at the 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

CASSI Science Mentor 2021-2022

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

A program funded by the Gordon and Betty Moore Foundation that 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

Berkeley Connect is a teaching and mentorship program intended to strengthen the relationship between undergraduate students and the Physics Department. As a Fellow, I contributed to curriculum design, 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/Research Mentor

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.

## SELECT PUBLICATIONS

PUBLICATION	15 journal articles, 3 as first author, 6 identifying a new class of supernovae
SUMMARY	discoveries that matched our theoretical model predictions

1. *Using Anisotropies as a Forensic Tool for Decoding Supernova Remnants*  
**Polin, A.**, P. Duffell, and D. Milisavljevic  
arXiv:2209.02134 *submitted to* The Astrophysical Journal Letters (5 September 2022)
2. *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)
3. *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)
4. *Infant-phase Reddening by Surface Fe-peak Elements in a Normal Type Ia Supernova*  
Qi Ni, Y., D. Moon, M. Drout, **A. Polin**, and 40 colleagues  
Nature Astronomy, 6, February (2022).
5. *SN2018byg: A Massive He-shell Double Detonation on a Sub-Chandrasekhar Mass WD*  
De, K., M. Kasliwal, **A. Polin**, and 27 colleagues  
The Astrophysical Journal Letters, 873, L18 (2019).