

# Zachary Weaver

## Graduate Student



Institute for Astrophysical  
Research  
725 Commonwealth Ave.  
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Dept. of Astronomy  
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02215



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## Interests

Active Galactic Nuclei — High-Energy Astrophysics — Extragalactic Astronomy  
Theoretical Astrophysics — Science Outreach — Online Education

## Education

- 2017- Graduate Student Boston University Department of Astronomy
- 2013-2017 B.A. in Physics and Astronomy Colgate University  
Magna Cum Laude with High Honors  
Senior Thesis: The Dramatic 2016 Optical and Gamma-ray Outburst  
of the Blazar 3C454.3
- Spring 2016 Semester Abroad Cardiff University, Cardiff, Wales, United Kingdom  
Engaged in international academic pursuits through computer sci-  
ence, astronomy, and Welsh courses

## Research Projects

- 2017-2018 Kinematics of Parsec-scale Jets of Gamma-Ray Blazars at 43 GHz  
within the VLBA-BU-BLAZAR Program  
Supervisors: Alan Marscher, Svetlana Jorstad (Boston University)
- 2016-2018 The Dramatic June 2016 Outburst of the Blazar 3C454.3  
Supervisor: Thomas Balonek (Colgate University)
- 2014-2017 Optical Monitoring of Select Active Galactic Nuclei and Variable Stars  
Supervisor: Thomas Balonek (Colgate University)
- 2016 ALFALFA Undergraduate Training Program  
Supervisor: Thomas Balonek (Colgate University)
- 2016 Volcanology Fieldwork in the Chilean Andes  
Supervisor: Karen Harpp (Colgate University)
- 2015 Using Exponential Curves to Characterize the 2014-2015 Outburst of  
the Blazar 3C454.3  
Supervisor: Thomas Balonek (Colgate University)

## Publications

1. The Dramatic June 2016 Optical Outburst and Micro-Variability of the  
Blazar 3C 454.3  
Weaver, Z., & Balonek, T. J.  
B.A.A.S. #229, 250.33, 2017
2. The Optical Variability of the Blazar 3C 454.3 over Three Decades  
from the Colgate University Foggy Bottom Observatory  
Balonek, T. J., Weaver, Z., Didio, N., *et al.*  
B.A.A.S. #229, 250.34, 2017
3. Detection of optical activity in the BL Lac Object OT 081 (PKS  
1749+096)  
Balonek, T. J., Stahlin, R. W., Chapman, K. J., *et al.*  
The Astronomer's Telegram, No. 9259, 2016
4. A Dramatic Optical Flare and Micro-variability in the Blazar 3C 454.3  
Balonek, T. J., Boni, S. J., Chapman, K. J., *et al.*  
The Astronomer's Telegram, No. 9178, 2016
5. The 2013-2015 Optical Outburst and Historic Light-curve of the  
Blazar 3C 454.3  
Balonek, T. J., Weaver, Z., Didio, N., *et al.*  
B.A.A.S. #227, 243.60, 2016

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## Teaching Experience

Spring 2018	Astr. 109: Cosmology Boston University	TA
Fall 2017	Astr. 107: Life Beyond Earth Boston University	TA
Spring 2017	Astr. 102: Stars, Galaxies, & the Universe Colgate University	TA
Fall 2016	Astr. 210: Intermediate Astronomy Colgate University	TA
Fall 2016	Phys. 111: Fundamental Physics I Colgate University	Private Tutor
2016-2014	Astr. 101: Solar System Astronomy Colgate University	TA
Fall 2015	Emerging Global Challenges Colgate University	Co-Taught
Spring 2015	Advent of the Atomic Bomb Colgate University	TA

## Observing Experience

6 Nights	1.8-m Perkins Telescope	Lowell Observatory
	6 nights to be trained to use the telescope with the PRISM instrument for photometric and polarimetric monitoring of <i>Fermi Space Telescope</i> Gamma-Ray Blazars.	
~200 Nights	16-inch Telescope	Colgate University Foggy Bottom Observatory
	About 200 nights over three years spent monitoring active galactic nuclei and variable stars.	

## Presenting Experience

Jan. 2017	229th Annual Meeting of the American Astronomical Society Grapevine, Texas - Poster Presentation	
Dec. 2016	Colgate University Department of Physics and Astronomy Senior Thesis Presentations - Oral Presentation	
Nov. 2016	Undergraduate Research Day Syracuse University Department of Physics - Oral Presentation	
Oct. 2016	Keck Northeast Astronomy Consortium Symposium on Undergraduate Research - Poster Presentation	
Jun. 2016	Undergraduate ALFALFA Training Meeting at the National Radio Observatory, Green Bank, West Virginia - Poster Presentation	
Oct. 2015	Keck Northeast Astronomy Consortium Symposium on Undergraduate Research - Oral Presentation	
Nov. 2014	Keck Northeast Astronomy Consortium Symposium on Undergraduate Research - Oral Presentation	

## Awards

2017	Alumnae Leadership Scholarship
2016	Sigma Pi Sigma Physics Honor Society
2015 - 2017	Ronald J. Taylor '67 Endowed Scholarship
2015, 2016	Class of 1957 Endowed Scholarship
2014	Phi Eta Sigma First-Year Honor Society
2013	Colgate University Benton Scholar
2013-2016	Colgate University Dean's List

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## Public Outreach

- 2017 - Boston University Public Open Nights Coit Observatory  
Ran weekly open nights for the public to use 8-inch telescopes and observe seasonal objects.
- 2013-2017 Foggy Bottom Observatory Open Nights Colgate University  
Operated the telescopes and interfaced with the public during open house events at the Colgate University Foggy Bottom Observatory during a variety of events, such as Reunion Weekend nights, Astronomy classes, local group visits, and lunar eclipse events.
- 2013-2017 Science Outreach Coordinator Ho Tung Visualization Lab, Colgate University  
Student coordinator of the Ho Tung Visualization Lab (planetarium) at Colgate University. Gave "Sky Talk" guest lectures on objects of interest in the night sky using Digistar 5 program. Also ran science outreach events with local schools and groups on a variety of topics, including topics as diverse as volcanos, weather, comets and asteroids, and deep space objects.

## Skills and Techniques

### Coding

Python — MATLAB — IDL — HTML — CSS — LaTeX

### Techniques

Photometry — *Fermi Large Area Telescope* Analysis — Differential Radio Mapping  
Astrophotography — Computer Building

## References

### Thomas J. Balonek

Position Colgate University Professor of Physics and Astronomy  
Address 407 Ho Science Center, 13 Oak Drive, Hamilton, New York, 13346  
Email [tbalonek@colgate.edu](mailto:tbalonek@colgate.edu)  
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### Jeff Bary

Position Associate Professor of Physics and Astronomy  
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Email [jbary@colgate.edu](mailto:jbary@colgate.edu)  
Tel. (315) 228-7693

### Karen Harpp

Position Professor of Geology and Peace and Conflict Studies; University Marshal; Director, Benton Scholars Program  
Address 424 Ho Science Center, 13 Oak Drive, Hamilton, New York, 13346  
Email [kharp@colgate.edu](mailto:kharp@colgate.edu)  
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### Jonathan Levine

Position Associate Professor of Physics and Astronomy  
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