




# Alexander Gagliano

Updated March 10, 2022

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## RESEARCH INTERESTS

Real-time transient classification for large surveys • Transient-host galaxy feedback • Early-time transient phenomena (CSM interaction, flash-ionization, shock-breakout) • SN Ia cosmology • Galaxy simulations • Data analysis & visualization tools

## EDUCATION

**University of Illinois at Urbana-Champaign** Champaign, IL  
PhD Candidate, Department of Astronomy Aug 2018 – Present  
Advisor: Gautham Narayan  
Cum. GPA: 3.96/4.00.

**Virginia Polytechnic Institute & State University** Blacksburg, VA  
BS in Computational Modeling & Data Analytics Aug 2013 – June 2017  
Summa Cum Laude  
Physics Minor, Honors Scholar  
In-Major GPA: 4.00/4.00.

## RESEARCH POSITIONS

**Pre-Doctoral Fellow** | CCA Flatiron Jan 2022 – Present  
Advisors: Shirley Ho, Gabriella Contardo, Dan Foreman-Mackey, David Hogg  
*A Recommendation Engine for Time-Domain Discoveries with LSST*

**NSF Graduate Fellow** | UIUC/NCSA Aug 2018 – Present  
Advisor: Gautham Narayan  
*An Early-Time Optical and Ultraviolet Excess in the type-Ic SN 2020oi*  
*Using Host Galaxy Information to Accurately Distinguish Supernovae*

**Post-Bac. Researcher** | Los Alamos National Lab. Sept 2017 – Aug 2018  
Advisors: Joseph Smidt, Aycin Aykutalp  
*Waternet: A Chemical Network for Cosmological-Scale Molecular Studies*

**Comp. Physics Intern** | Los Alamos National Lab. June 2017 – Sept 2017  
Advisors: Joseph Smidt, Brandon Wiggins  
*Probing The Cosmological Origins of Earth's Water*

**Undergraduate Researcher** | Social & Decision Analytics Lab. Aug 2016 – May 2017  
Advisor: Stephanie Shipp, Gizem Korkmaz  
*Quantifying the Impact of Open Source Packages in R*

**Software Intern** | Network Dynamics & Simulations Lab. Sept 2016 – May 2017  
Advisor: Eric Nordberg, Henning Mortveit  
*Developing Realistic Epidemiology Simulations from Public Data*

**Undergraduate Researcher** | Virginia Tech Aug 2015 – May 2017  
Advisor: Shunsaku Horiuchi  
*Analyzing Gamma Ray Emission from Nearby non-AGN Galaxies*

**Undergraduate Researcher** | Cerro-Tololo Observatory Jan 2015 – Mar 2015  
Advisor: Juan Madrid  
*A Wide-field Map of Intracluster Globular Clusters in Coma*

**High-School Intern** | NASA Goddard Aug 2011 – June 2013  
Advisor: Jeremy Schnittman  
*Designing a Third-Generation Survey for Gravitational Microlensing Events*

## FELLOWSHIPS AND AWARDS

• NSF Graduate Research Fellowship (\$102k)	2020-2023
• Illinois Distinguished Fellowship (\$75k)	2018-2022
• Center for Astrophysical Surveys Fellowship (\$30k)	2019
• Research Live Finalist (UIUC University-wide Communication Competition)	2022
• ASA Astrostatistics Interest Group Best Paper Award, <i>GHOST</i>	2021
• Lew Snyder Graduate Student Travel Award (\$1k)	2021
• AGU Sharing Science Outreach Grant (\$500)	2021
• ASP Conference Scholarship	2020
• DPS/AAS Education and Outreach Grant (\$1k, astro[sound]bites)	2020 & 2021
• University-wide Fellowship Application Competition Award	2019
• SC18 Supercomputing Visualization Showcase (2 <sup>nd</sup> )	2018
• University of Illinois Travel Grant (\$350)	2018
• Virginia Tech Rhodes & Marshall Scholarship Nominee	2017
• Academy of Integrated Science Distinguished Senior (\$1.4k)	2017
• College of Science Outstanding Senior, Finalist (Top 1%)	2017
• Mathematical Contest in Modeling, Meritorious Winner (Top 7% Globally)	2017
• Astronomy Society of the Pacific Meeting Travel Grant	2016
• Wayne & Claire Horton Fellowship (\$10k)	2015
• Best Presentation, Virginia Honors Council	2015
• Sigma Phi Epsilon Balanced Man Scholarship (\$1k)	2015
• University Honors Norrine Bailey Spencer Strong Start Award	2013
• Loudoun Future Leaders Scholarship (\$1.5k)	2013
• International Space Olympics, Astrophysics Category (1 <sup>st</sup> /200)	2012
• Moody's Mega Math Competition, Honorable Mention (\$1k)	2012

## REFEREED PUBLICATIONS

### FIRST AUTHOR:

3. **An Early-Time Optical and Ultraviolet Excess in the type-Ic SN 2020oi.**  
[Gagliano, A.](#), Izzo, L., Kilpatrick, C.D., et al., 2021.  
*arxiv pre-print*, doi:2105.09963.
2. **GHOST: Using Only Host Galaxy Information to Accurately Associate and Distinguish Supernovae.**  
[Gagliano, A.](#), Narayan, G., Engel, A., and Kind, M.C., 2021.  
*The Astrophysical Journal*, 908(2), p.170.
1. **Waternet: A Non-Equilibrium Chemical Model for Tracking Molecules in Cosmological Simulations.**  
[Gagliano, A.](#), Smidt, J., Bialy, S., Jones, S., Wiggins, B., and Fields, J., 2021.  
*in prep.*

### SECOND AUTHOR:

1. **The Simulated Catalog of Optical Transients and Correlated Hosts (SCOTCH)**  
Lokken, M., [Gagliano, A.](#), et al., 2022. *in review.*

### NTH AUTHOR:

6. **Statistical Modeling of Galaxy Catalogs with Normalizing Flows.**  
Crenshaw, J.F. Kalmbach, B., Malz, A. et al. (incl. [Gagliano, A.](#)), 2021. *in prep.*
5. **AT 2020neh: A fast rising tidal disruption event from an intermediate mass black hole.**  
Angus, C., Baldassare, V., Mockler, B. et al. (incl. [Gagliano, A.](#)), 2022. *in prep.*
4. **Final Moments I: Precursor Emission, Envelope Inflation, and Enhanced Mass loss Preceding the Luminous Type II Supernova 2020tlf.**  
Jacobson-Galán M., Dessart., L., Jones, D. et al. (incl. [Gagliano, A.](#)), 2021.  
*The Astrophysical Journal*, 924(1), p.15.
3. **Progenitor and Close-In Circumstellar Medium of Type II Supernova 2020fqv from High-Cadence Photometry and Ultra-Rapid UV Spectroscopy.**  
Tinyanont,S., Ridden-Harper, R., Foley, R. et al. (incl. [Gagliano, A.](#)), 2021.

MNRAS, doi:10.1093/mnras/stab2887.

2. **The Young Supernova Experiment: Survey Goals, Overview, and Operations.**  
Jones, D.O., Foley, R.J., Narayan, G., et al. (incl. [Gagliano, A.](#)), 2021.  
*The Astrophysical Journal*, 908.2, p.143.
1. **A Wide-field Map of Intracluster Globular Clusters in Coma.**  
Madrid, J.P., O'Neill, C.R., [Gagliano, A.T.](#) and Marvil, J.R., 2018.  
*The Astrophysical Journal*, 867(2), p.144

## TELESCOPE PROPOSALS

Gemini Observatory – 22.0 hours awarded (PI) <i>The Young Supernova Experiment: Creating the Reference low-z Supernova Sample for Cosmology</i>	2022A
Gemini Observatory – 7.7 hours awarded (PI) <i>Probing Pre-Explosion Mass Loss Through NIR Spectroscopy of Young SNe Ib/c</i>	2022A
Gemini Observatory – 300 hours awarded (col) <i>A Spectroscopically Complete Census of Faint Transients Observed by the Young Supernova Experiment</i>	2021B
James Webb Space Telescope (JWST) – 17.2 hours awarded (col) <i>Nucleosynthesis, Astrophysics, and Cosmology with IR Observations of a Gravitational Wave Counterpart</i>	GO Cycle 1, 2021
James Webb Space Telescope (JWST) – 9.3 hours awarded (col) <i>Detecting the Synthesis of the Heaviest Elements with Photometry of a Kilonova in the Optically Thin Phase</i>	GO Cycle 1, 2021
James Webb Space Telescope (JWST) – 14.9 hours awarded (col) <i>Nebular Spectroscopy of a Kilonova with JWST</i>	GO Cycle 1, 2021
Gemini Observatory (GMOS) – 22 hours awarded (col) <i>The Young Supernova Experiment: Creating the Reference low-z Supernova Sample for Cosmology</i>	2021B

## SEMINARS & COLLOQUIA

DESC Time Domain Working Group, invited ( <i>online</i> )	Feb 2022
Tri-State Cosmology x Data Science, invited ( <i>online</i> )	Jan 2022
DESC DC2 Analysis Seminar, invited ( <i>online</i> )	Sept 2021
ASTR596: Artificial Intelligence in Astronomy, invited ( <i>Champaign, IL, USA</i> )	Sept 2021
LSST Transient and Variable Science Plenary, invited ( <i>online</i> )	June 2021
DESC Photo-z Working Group, invited ( <i>online</i> )	April 2021
DESC Supernova Working Group, invited ( <i>online</i> )	April 2021
NCSA, invited ( <i>Champaign, IL, USA</i> )	March 2020

## CONFERENCE TALKS

Research Byte, LSST DESC February Meeting ( <i>online</i> )	Feb 2022
Exploring the Transient Universe with the Nancy Grace Roman Space Telescope ( <i>online</i> )	Feb 2022
Caltech Astroinformatics 2021 ( <i>online</i> )	Nov 2021
ASA Joint Statistical Meeting 2021, invited ( <i>online</i> )	Aug 2021
Rubin Project and Community Workshop ( <i>online</i> )	Aug 2021
Illinois Astrofest #2 ( <i>online</i> )	May 2021
LSSTC Enabling Science Broker Workshop II, invited ( <i>online</i> )	Apr 2021
LSST DESC plenary, invited ( <i>online</i> )	Feb 2021
Rubin Project and Community Workshop ( <i>online</i> )	Aug 2020
EAS 2020 ( <i>online</i> )	Jul 2020
LSST DESC ( <i>Tucson, AZ, USA</i> )	Jan 2020
American Astronomical Society Meeting #233 ( <i>Seattle, WA, USA</i> )	Jan 2019
Los Alamos National Laboratory Student Symposium ( <i>Los Alamos, NM, USA</i> )	Aug 2017
International Space Olympics, invited ( <i>Korolyov, Russia</i> )	Oct 2012

## TEACHING & MENTORING

### GRADUATE STUDENTS

**Emmanuel Garcia Berrios** (UIUC), Sloan Peer Mentor, 2021–Present

- Providing weekly guidance on research and professional development

## UNDERGRADUATE STUDENTS

**Holly Wingren** (UIUC), Research Advisor, 2022–Present

- Creating a spatially-resolved galaxy model for supernova class

**Athish Thiruvengadam** (UIUC), Research Advisor, 2021–Present

- Investigating ML methods for early classification of transients in YSE

**Zimo Qu** (UIUC), Graduate Mentor, 2021–Present

- Provided guidance in undergraduate coursework and research

**Kunal Bhatia** (UIUC), Graduate Mentor, 2019–2021

- Held bi-weekly meetings to revise application materials for graduate school
- Will attend King's College London for Physics MSc in Fall 2022

**GC 500: Graduate Mentor Practicum**

Jan 2022 – May 2022

**Undergraduate Research Apprenticeship Program | Mentor**

Aug 2021–May 2022

**La Serena School for Data Science | Teaching Assistant**

Aug 2021

## RELEVANT COURSES

Intermediate Data Analytics & Machine Learning

Spring 2017

CS Foundations for Data Science

Spring 2017

Quantitative Analysis of Physical Data

Spring 2017

Math Modeling: Methods and Tools (I,II)

Fall 2015-Spring 2016

Methods of Computational Physics

Fall 2016

Data Analysis & Visualization

Fall 2016

Computational Modeling & Data Analytics Capstone

Fall 2016

## JOURNAL CLUB TALKS

MIT Brown Bag Lunch, invited

May 2022 (Exp.)

Harvard CfA Talk

April 2022 (Exp.)

Caltech Tea, invited (*online*)

Mar 2022

Princeton Thunch, invited (*online*)

Feb 2022

Yale Galaxy Lunch, invited (*online*)

Mar 2021

UIUC Journal Club

May 2021

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Feb 2019

## CONFERENCE POSTERS

Illinois Astrofest #1 (*Champaign, IL, USA*)

Apr 2019

Water Workshop (*Zurich, Switzerland*)

Feb 2018

American Astronomical Society Meeting #231 (*Baltimore, MD, USA*)

Jan 2018

Virginia Biocomplexity Institute Research Symposium (*Blacksburg, VA, USA*)

Nov 2016

American Astronomical Society Meeting #227 (*Kissimee, FL, USA*)

Jan 2016

National Science Foundation REU Symposium (*Arlington, VA, USA*)

Oct 2015

Virginia Tech Undergraduate Research Symposium (*Blacksburg, VA, USA*)

Jul 2015

Virginia Collegiate Honors Council Spring Conference (*Richmond, VA, USA*)

Apr 2015

## WORKSHOPS & SUMMER SCHOOLS

LSSTC Enabling Science Broker Workshop II (*online*)

Apr 2021

KROME Astrochemistry Bootcamp (*online*)

Feb 2021

LSSTC Enabling Science Broker Workshop I (*online*)

Oct 2020

DotDotAstronomy (*online*)

Aug 2020

GPAP Plasma Physics Summer School (*Swarthmore, PA, USA*)

Apr 2019

Summer School in Statistics for Astronomers XV (*State College, PA, USA*)

Jun 2019

La Serena School for Data Science (*La Serena, Chile*)

Aug 2018

## SELECTED OUTREACH

**Astro[Sound]Bites | Founder and Co-Host**

Nov 2019–Present

- Founded bi-weekly technical astronomy podcast
- 36 episodes, >7k downloads, 200 listeners/episode in 55 countries

**Astronomy on Tap, Champaign-Urbana | Organizer**

Aug 2020–Present

- Designing posters, emceeing and scheduling speakers for monthly public talks (remote as of 2020)

**Astronomical Society of the Pacific | Design Tester**

Mar 2019 – May 2020

<ul style="list-style-type: none"> <li>• Evaluated new outreach strategies for improving audience engagement in STEM events</li> </ul>	
<b>Education Justice Project   Workshop Coordinator</b>	Jan 2019 – Present
<ul style="list-style-type: none"> <li>• Designing data science workshops at Danville Correctional Center for 30 incarcerated students</li> </ul>	
<b>Universe Awareness   Astronomy Ambassador</b>	Jan 2017 – Jun 2018
<ul style="list-style-type: none"> <li>• Coordinated research talks, stargazing events in Los Alamos</li> </ul>	
<b>The Story Of Foundation   Exhibit Researcher</b>	Dec 2016 – Dec 2017
<ul style="list-style-type: none"> <li>• Spearheaded creation of sound-based astronomy exhibit in Goa, India using Python, Arduino; viewed by &gt;2k students</li> </ul>	
<b>Computational Modeling Club   Vice President</b>	Aug 2016 – May 2017
<ul style="list-style-type: none"> <li>• Created and led student mentorship program</li> <li>• Coordinated 3-day hackathon of 100 students</li> </ul>	
<b>IAU Office of Astronomy for Development   Intern</b>	Aug 2016 – Sept 2016
<ul style="list-style-type: none"> <li>• Designed and led secondary school science activities for National Science Week with SAAO, reaching &gt;1.2k students</li> </ul>	
<b>American Astronomical Society   Astronomy Ambassador</b>	Jan 2015 – Jan 2016
<ul style="list-style-type: none"> <li>• Participated in 2-day outreach training</li> <li>• Hosted stargazing nights at Virginia Tech (in English) and Berthe et Jean, Gabon (in French)</li> </ul>	

## OUTREACH TALKS

Astronomy on Tap Champaign-Urbana ( <i>Champaign, IL, USA</i> )	Dec 2021
Communicating Astronomy with the Public ( <i>online</i> )	May 2021
Bay Area Science Festival, invited ( <i>online</i> )	Oct 2020
Champaign-Urbana Astronomical Society, invited ( <i>online</i> )	Oct 2020
PechaKucha Night Vol. 31, invited ( <i>Champaign, IL, USA</i> )	Mar 2020
Astronomy on Tap Champaign-Urbana ( <i>Champaign, IL, USA</i> )	Feb 2020
AAS Astronomy Ambassadors Alumni Panel, invited ( <i>Seattle, WA, USA</i> )	Jan 2020
Communicating Astronomy with the Public ( <i>Fukuoka, Japan</i> )	Mar 2018
UNM Community Education Program, invited ( <i>Los Alamos, NM, USA</i> )	Feb 2018
The Story of Space, invited ( <i>Goa, India</i> )	Nov 2017
Academy of Science Commencement Address, invited ( <i>Sterling, VA, USA</i> )	Jun 2017
CMDA Commencement Address, invited ( <i>Blacksburg, VA, USA</i> )	May 2017
Spark, Virginia TEDx Event ( <i>Blacksburg, VA, USA</i> )	Nov 2016

## ACADEMIC SERVICE

<b>Reviewer for the AAS Journals</b>	Ongoing
<b>UIUC Astronomy Graduate Admissions   Committee Member</b>	Oct 2021–Present
<ul style="list-style-type: none"> <li>• Weekly meetings with three faculty members to coordinate recruitment. Individually scored ~100 applications and selected students for admission to the UIUC graduate program</li> </ul>	
<b>UIUC Transient Lunch   Co-Founder</b>	Jan 2022–Present
<ul style="list-style-type: none"> <li>• Created/hosted bi-weekly meetings (~20 people) to discuss recent transient papers and host remote speakers.</li> </ul>	
<b>DESC Sprint Week 2021   Local Organizing Committee</b>	Sept 2021–Oct 2021
<ul style="list-style-type: none"> <li>• Designing hack schedule and coordinating logistics for ~100 attendees in team of 16</li> </ul>	
<b>IAU Junior Member Working Group   Associate Member</b>	Jul 2021–Aug 2021
<ul style="list-style-type: none"> <li>• Drafted official UNESCO position paper on youth engagement in team of 40 on behalf of 400 NGOs</li> <li>• Representing the IAU in UNESCO's 75th anniversary event: "Beyond Celebrations: A Call for Youth Engagement!"</li> </ul>	
<b>LSST/DESC APS-IDEA Team   Member</b>	Jan 2021–Present
<ul style="list-style-type: none"> <li>• Discuss collaboration-wide initiatives for increasing diversity</li> </ul>	
<b>Society for Equity in Astronomy   Journal Club Host</b>	Jan 2021–Present
<ul style="list-style-type: none"> <li>• Lead monthly department-wide discussions on select DEI topics</li> </ul>	
<b>Graduate Student Astro-ph   Organizer</b>	Aug 2019–Aug 2020
<ul style="list-style-type: none"> <li>• Coordinated graduate student presentations and discussions of recent publications</li> </ul>	
<b>VT Honors Odyssey Fellowships   Selection Committee Member</b>	Mar 2018

## MEDIA

PechaKucha Night CU (2020). [Alex Gagliano](#). YouTube.

NCSA (2020). [NCSA and U of I Announce new Center Surveys](#). NCSA/UIUC.

Hille, K (2018). [Hubble Uncovers Thousands of Globular Star Clusters](#). NASA.

UNAWWE (2017). [‘Story Of Space’ Astronomy Festival By UNAWWE Ambassador](#). UNAWWE.

VT (2017). [Scholarship winners Alex Gagliano and Amy Harris honored](#). VT.

TEDxTalks (2017). [Looking out to Look in](#). YouTube.

Mackay, S (2017). [Undergraduates assist in economic impact study](#). Virginia Tech.

Angelus, A. D. (2017). [Virginia Tech group overcomes cultural seclusion](#). Collegiate Times.

Madrid, J. (2016). [Alex Gagliano presenting his AAS Poster](#). ATNF.

Geddie, J. L. (2013). [Alex Gagliano extends talent towards to the stars](#). Loudoun Times.

## ACTIVE COLLAB- ORATIONS

LSST Transient and Variable Stars (TVS) Collaboration • Dark Energy  
Science Collaboration (LSST/DESC) • Young Supernova Experiment (YSE) •  
the ANTARES Project • the PLAsTiCC Team • American Statistical Association