ALEXANDER GAGLIANO

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ACADEMIC APPOINTMENT

Massachusetts Institute of Technology — Cambridge, MA
Harvard University | Center for Astrophysics — Cambridge, MA
NSF Institute for AI and Fundamental Interactions in Physics
IAIFI Fellow — Aug 2023-Present

EDUCATION

University of Illinois at Urbana-Champaign — Champaign, IL
Ph.D., Department of Astronomy — Aug 2018 – April 2023
Advisor: Gautham Narayan
Cumulative GPA: 3.96/4.00.

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

PRIOR APPOINTMENTS

Pre-Doctoral Fellow | CCA Flatiron — Jan 2022–June 2022
Advisors: Dan Foreman-Mackey, Gabriella Contardo

NSF Graduate Research Fellow | UIUC/Natl. Center for Supercomputing Applications — Aug 2018 – May 2023
Advisor: Gautham Narayan

Post-Baccalaureate Researcher | Los Alamos National Laboratory — Sept 2017 – Aug 2018
Advisors: Joseph Smidt, Aycin Aykutalp

FELLOWSHIPS & AWARDS

- NSF Graduate Research Fellowship ($102k) — 2020-2023
- Illinois Distinguished Fellowship ($75k) — 2018-2022
- Center for Astrophysical Surveys Fellowship ($30k) — 2019
- Needles in Rubin's Haystack Anomaly Detection Workshop Grant ($18k) — 2023
- UIUC Research Live! (1st place in campus-wide sci. comm.) — 2022
- ASA Astrostatistics Interest Group Best Paper Award, *GHOST* — 2021
- DPS/AAS Education and Outreach Grant ($1k, astro[sound]bites) — 2020 & 2021
- SC18 Supercomputing Visualization Showcase (2nd) — 2018
- Academy of Integrated Science Distinguished Senior ($1.4k) — 2017
- Mathematical Contest in Modeling, Meritorious Winner (Top 7% Globally) — 2017
- Wayne & Claire Horton Fellowship ($10k) — 2015
- International Space Olympics, Astrophysics Category (1st/200) — 2012

TELESCOPE PROPOSALS

LAS CAMPANAS OBSERVATORY – 2 nights awarded (PI) — 2024A
- *A High-Cadence Spectroscopic Study of Transients with Magellan*

MMT OBSERVATORY – 4 nights awarded (PI) 2024A
- *Linking Galaxy Mergers to Supernova Physics with Binospec*
- *A High-Cadence Spectroscopic Study of Transients with the MMT*

GEMINI OBSERVATORY – 44.0 hr awarded (PI) 2022A,2022B
- *The Young Supernova Experiment: Creating the Reference low-z Supernova Sample for Cosmology*
- *Probing Pre-Explosion Mass Loss Through NIR Spectroscopy of Young SNe Ib/c*

JAMES WEBB SPACE TELESCOPE (JWST) – 41.4 hr awarded (coI) GO Cycle 1
- *Nucleosynthesis, Astrophysics, and Cosmology with IR Observations of a Gravitational Wave Counterpart*
- *Detecting the Synthesis of the Heaviest Elements with Photometry of a Kilonova*
- *Nebular Spectroscopy of a Kilonova with JWST*

REFEREED PUBLICATIONS

FIRST AUTHOR: *h=11 with 397 total citations across 19 papers (see NASA ADS).*

3. **Gagliano, A.**, Contardo, G., Foreman-Mackey, D., et al. "First Impressions: Early-Time Classification of Supernovae using Host Galaxy Information and Shallow Learning." *ApJ*, 954(1), 2023.

2. **Gagliano, A.,** Izzo, L., Kilpatrick, C.D., et al., "An Early-Time Optical and Ultraviolet Excess in the type-Ic SN 2020oi." *ApJ*, 924(2), p.55, 2022. *ADS.*

1. **Gagliano, A.**, Narayan, G., Engel, A., and Kind, M.C., "GHOST: Using Only Host Galaxy Information to Accurately Associate and Distinguish Supernovae." *ApJ*, 908(2), p.170, 2021. *ADS.*

SECOND AUTHOR:

1. Lokken, M., **Gagliano, A.**, et al., "The Simulated Catalogue of Optical Transients and Correlated Hosts (SCOTCH)." *MNRAS*, 520(2), 2887, 2023. *ADS.*

NTH AUTHOR:

12. Jacobson-Galán, W., Dessart, L., et al. (incl. **Gagliano, A.**), "SN 2023ixf in Messier 101: Photo-ionization of Dense, Close-in Circumstellar Material in a Nearby Type II Supernova." *ApJL*, 954(2), 2023. *ADS.*

11. Kilpatrick, C., Foley, R., et al. (incl. **Gagliano, A.**), "SN 2023ixf in Messier 101: A Variable Red Supergiant as the Progenitor Candidate to a Type II Supernova". *ApJL*, 952(1), 2023. *ADS.*

10. Tinyanont, S., Woosley, S., Taggart, K., et al. (incl. **Gagliano, A.**), "Supernova 2020wnt: An Atypical Superluminous Supernova with a Hidden Central Engine." *ApJ*, 951(1), 2023. *ADS.*

9. Aleo, P., Malanchev, K., Sharief, S., et al. (incl. **Gagliano, A.**), "The Young Supernova Experiment Data Release 1 (YSE DR1): Light Curves and Photometric Classification of 1975 Supernovae." *ApJSS*, 266(1), 2023. *ADS.*

8. Ward, S., Thorp, S., Mandel, K. S. et al. (incl. **Gagliano, A.**), "Relative Intrinsic Scatter in Hierarchical Type Ia Supernova Sibling Analyses: Application to SNe 2021hpr, 1997bq, and 2008fv in NGC 3147" *ApJ*, 956(2) 2023. *ADS.*

7. Zenati, Y., Wang, Q., Bobrick, A. et al. (incl. **Gagliano, A.**), "Evidence for Extended Hydrogen-Poor CSM in the Three-Peaked Light Curve of Stripped Envelope Ib Supernova." *submitted to ApJ on Aug. 26,* 2022. *ADS.*

6. Förster, F., M. Muñoz Arancibia, A., Reyes, I., **Gagliano, A.**, et al., "DELIGHT: Deep Learning Identification of Galaxy Hosts of Transients Using multi-resolution images." *AJ*, 164(5), 2022. *ADS.*

5. Angus, C., Baldassare, V., Mockler, B. et al. (incl. **Gagliano, A.**), "AT 2020neh: A fast rising tidal disruption event from an intermediate mass black hole." *NatAs,* 6, p.1452, 2022. *ADS.*

4. Jacobson-Galán, M., Dessart., L., Jones, D. et al. (incl. **Gagliano, A.**), "Final Moments I: Precursor Emission, Envelope Inflation, and Enhanced Mass loss Preceding the Luminous Type II Supernova 2020tlf." *ApJ*, 924(1), p.15, 2021. *ADS.*

3. Tinyanont, S., Ridden-Harper, R., Foley, R. et al. (incl. **Gagliano, A.**), "Progenitor and Close-In Circumstellar Medium of Type II Supernova 2020fqv from High-Cadence Photometry and Ultra-Rapid UV Spectroscopy." *MNRAS*, 512(2), 2021. *ADS.*

2. Jones, D.O., Foley, R.J., Narayan, G., et al. (incl. **Gagliano, A.**), "The Young Supernova Experiment: Survey Goals, Overview, and Operations." *ApJ*, 908(2), p.143, 2021. *ADS.*

1. Madrid, J.P., O'Neill, C.R., **Gagliano, A.** and Marvil, J.R., "A Wide-field Map of Intracluster Globular Clusters in Coma.". *ApJ*, 867(2), p.144, 2018. *ADS.*

CONFERENCE PROCEEDINGS

4. Villar, V. A., de Soto, K, & **Gagliano, A.**, "Hierarchical Cross-entropy Loss for Classification of Astrophysical Transients." *Machine Learning and the Physical Sciences, NeurIPS 2023. ADS.*

3. **Gagliano, A.** & Villar, V. A., "A Physics-Informed Variational Autoencoder for Rapid Galaxy Inference and Anomaly Detection." *Machine Learning and the Physical Sciences, NeurIPS 2023. ADS.*

2. Breivik, K., Connolly, A., Saavik Ford, K.E. et al. (incl. **Gagliano, A.**), "From Data to Software to Science with the Rubin Observatory LSST." *White paper;* arXiv:2208.02781. *ADS.*

1. **Gagliano, A.**, Rice, M. & Saunders, W.R., 2020. "Astro[sound]bites: a New Audio Resource for Conveying Recent Astronomy Research." *ASP2020: Embracing the Future*, p.111, 2021. *ADS.*

SEMINARS & COLLOQUIA

University of Michigan Astronomy Colloquium, *invited* (Ann Arbor, MI)	Nov 2023
Five Colleges Astronomy Colloquium, *invited*	Oct 2023
TVS Colloquium, *invited*	Aug 2023
Caltech Time-Domain Astronomy Center, *invited* (Pasadena, CA)	Sept 2022
UC Berkeley Astronomy Department, *invited* (Berkeley, CA)	Sept 2022
Lancaster University Seminar, *invited* (remote)	May 2022
Harvard CfA Seminar (Cambridge, MA)	April 2022
DESC Time Domain Working Group, *invited* (remote)	Feb 2022
Tri-State Cosmology x Data Science, *invited* (remote)	Jan 2022
DESC DC2 Analysis Seminar, *invited* (remote)	Sept 2021
ASTR596: AI in Astronomy Lecture, *invited* (Champaign, IL)	Sept 2021
LSST Transient and Variable Science Plenary, *invited* (remote)	June 2021
DESC Photo-z Working Group, *invited* (remote)	April 2021
DESC Supernova Working Group, *invited* (remote)	April 2021
National Center for Supercomputing Applications, *invited* (Champaign, IL)	March 2020

ACADEMIC SERVICE

LSST/DESC Virtual Meeting | Science Organizing Committee	Feb 2024
Boston Astrophysics x ML Hackathon | Local Organizing Committee	Jan 2024
LSST ISSC Executive Council Member | Co-Lead	Ongoing
LSST DESC Machine Learning (MaLTS) Topical Team | Co-Lead	Ongoing
Reviewer for ICML, NeurIPS, RASTI, JOSS, AAS Journals	Ongoing
LSST BOOM 2022 | Local Organizing Committee	July 2022
UIUC Astronomy Graduate Admissions | PhD Representative	Oct 2021–Mar 2022

- Individually scored ∼100 applications and selected students for admission

DESC Sprint Week | Local Organizing Committee   Sept 2021–Oct 2021
- Designed hack schedule and coordinating logistics for ∼100 attendees in team of 16

IAU Junior Member Working Group | Associate Member   Jul 2021–Aug 2021
- Drafted official UNESCO position paper on youth engagement in team of 40 on behalf of 400 NGOs

Society for Equity in Astronomy | Journal Club Host   Jan 2021–Present
- Lead monthly department-wide discussions on select DEI topics

VT Honors Odyssey Fellowships | Selection Committee Member   Mar 2018

CONFERENCE TALKS

Harvard/MIT Generative AI Workshop, *invited* (Cambridge, MA)	Jan 2024
Machine Learning for Transient Science, University of Warwick (remote)	Dec 2023
Cosmic Streams in the Era of Rubin (Puerto Vara, Chile)	Dec 2023
Rubin Project and Community Workshop (remote)	Aug 2023
Transient and Variable Universe (Champaign, IL)	June 2023
Rubin Observatory LSST @ Europe4 (remote)	Oct 2022
BOOM! An LSSTC Workshop (Champaign, IL)	July 2022
Exploring the Transient Universe with the Nancy Grace Roman Space Telescope (remote)	Feb 2022
Caltech Astroinformatics 2021 (remote)	Nov 2021
ASA Joint Statistical Meeting 2021, *invited* (remote)	Aug 2021
Rubin Project and Community Workshop (remote)	Aug 2021
Illinois Astrofest #2 (remote)	May 2021
LSSTC Enabling Science Broker Workshop II, *invited* (remote)	Apr 2021
LSST DESC plenary, *invited* (remote)	Feb 2021
Rubin Project and Community Workshop (remote)	Aug 2020
European Astronomical Society 2020 (remote)	Jul 2020
LSST DESC (Tucson, AZ)	Jan 2020
American Astronomical Society Meeting #233 (Seattle, WA)	Jan 2019

TEACHING & MENTORING

GRADUATE STUDENTS
Emmanuel Garcia Berrios (UIUC), Sloan Peer Mentor   2021–2022
- Provided weekly guidance on research, professional development

UNDERGRADUATE STUDENTS
Joost van Asperen (Harvard), Junior Thesis Advisor   2023
- Automated identification of spiral arms in supernova host galaxies and compared offsets by class

Zimo Qu (UIUC), Graduate Mentor   2021–2022
- Provided guidance in undergraduate coursework, research

Rubin Observatory Summer Data Summit	Guest Lecturer	July 2023
IAIFI PhD Summer School	Tutorial Lead	Aug 2023
UIUC Graduate College Mentoring Certification	
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

LUNCH TALKS

Harvard ITC Lunch Talk, *invited* (Cambridge, MA)	March 2024 (exp)
UCSC FLASH Talk, *invited* (Santa Cruz, CA)	Sept 2022
CCA Machine Learning Journal Club, *invited* (New York City, NY)	July 2022
MIT Brown Bag Lunch, *invited* (Cambridge, MA)	May 2022

Caltech Tea, *invited* (remote)   Mar 2022
Princeton Thunch, *invited* (Princeton, NJ)   Feb 2022
Yale Galaxy Lunch, *invited* (remote)   Mar 2021

SELECTED OUTREACH

Astro[Sound]Bites | Founder and Co-Host   Nov 2019–Jul 2023
- Founded bi-weekly astronomy podcast
- >15k downloads, 200 listeners in 70 countries

Astronomical Society of the Pacific | Design Tester   Mar 2019 – May 2020
- Evaluated strategies for improving audience engagement in STEM events

Education Justice Project | Workshop Coordinator   Jan 2019 – Jan 2020
- Designed data science workshops at Danville Correctional Center for 30 incarcerated students

Universe Awareness | Astronomy Ambassador   Jan 2017 – Jun 2018
- Coordinated stargazing events in Los Alamos

The Story Of Foundation | Exhibit Researcher   Dec 2016 – Dec 2017
- Spearheaded sound-based astronomy exhibit in Goa, India using Python, Arduino;
  viewed by >2k students

IAU Office of Astronomy for Development | Intern   Aug 2016 – Sept 2016
- Led secondary school science activities for Science Week with SAAO, reaching >1.2k students

ACTIVE COLLABORATIONS

- LSST Informatics and Statistics Science Collaboration (LSST/ISSC)
- LSST Dark Energy Science Collaboration (LSST/DESC)
- Young Supernova Experiment (YSE)
- ANTARES Project
- The ELAsTiCC Team