

Alexander T. Gagliano

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EDUCATION

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

| PHD, ASTRONOMY

Computational Science & Engineering Focus

Exp June 2023 | Champaign, IL

VIRGINIA TECH

| BS, COMPUTATIONAL MODELING & DATA ANALYTICS (CMDA)

Physics Minor

May 2017 | Blacksburg, VA

- Major Rank: 1
- Honors Scholar
- Summa Cum Laude
- Cum. GPA: 3.90/4.00

PUBLICATIONS

Madrid, J. P., O'Neill, C. R.,

Gagliano, A.T., & Marvil, J. R.

(2018). A Wide-field Map of Intracluster Globular Clusters in Coma. *ApJ*, 867(2), 144.

Gagliano, A., Smidt, J., Wiggins, B., & Jones, S. (2019), Astrochemistry in the Early Universe - I. Water Formation with Grackle. *ApJ*, in prep.

PRESENTATIONS

- 2018 **Toward Multisensory And Multidisciplinary Astronomy Outreach (Poster)**
CAP 2018, Japan
- 2018 **Water Formation In the Early Universe (Poster)**
Water Workshop, Switzerland
- 2018 **The Cosmological Origins of Water (Poster)**
231st AAS Meeting, Maryland
- 2017 **Cosmic Perspectives in a Globalized Society (Talk)**
The Story of Space, India
- 2017 CMDA Commencement Address (Talk)
- 2016 **Looking Out to Look In (Talk)**
Spark: Virginia Tech Tedx

RESEARCH & WORK EXPERIENCE

LOS ALAMOS NATIONAL LABORATORY | POSTBAC FELLOW

ADVISORS: DR. AYCIN AYKUTALP, DR. JOSEPH SMIDT

September 2017 – August 2018 | Los Alamos, NM

- Integrated AMR and particle-based cosmology simulations with improved supernovae model, 26-species chemical reaction network in C, F90
- Writing a paper on results as first author and presented at two conferences
- Investigated machine learning techniques for sub-grid accretion models

LOS ALAMOS NATIONAL LABORATORY | PHYSICS INTERN

ADVISORS: DR. JOSEPH SMIDT, DR. BRANDON WIGGINS

June 2017 – September 2017 | Los Alamos, NM

- Performed parallelized cosmological simulations with ENZO, yt
- Identified potential water formation sites in early universe

VIRGINIA TECH DEPARTMENT OF PHYSICS | RESEARCHER

ADVISOR: DR. SHUNSAKU HORIUCHI

August 2015 – May 2017 | Blacksburg, VA

- Searched for gamma-ray emissions from nearby stars and galaxies
- Improved data reduction and binned likelihood analysis skills in Linux

VIRGINIA BIOCOMPLEXITY INSTITUTE | SOFTWARE INTERN

ADVISORS: DR. KRISTY COLLINS, DR. ERIC NORDBERG

May 2015 – July 2015; January 2017 - May 2017 | Blacksburg, VA

- Invented an educational game using HTML5, Javascript, Construct2 for elementary school biology program of ~300 students.
- Created Python scripts to scrape web data for epidemiology simulations

CERRO-TOLOLO OBSERVATORY | RESEARCHER

ADVISORS: DR. JUAN MADRID, DR. KATIE KALEIDA

January 2015 – March 2015 | La Serena, Chile

- Generated catalog of 22,676 star clusters from HST/ACS data using PyRAF
- Analyzed clusters by creating radial density maps, Color Magnitude Diagrams in Python (see publications section)

NASA GODDARD | STUDENT RESEARCHER

ADVISOR: DR. JEREMY SCHNITTMAN

August 2011 – June 2013 | Greenbelt, MD

- Quantified efficiency of exoplanet detection for varying binary system parameters, using a χ^2 -GOF model
- Implemented a Markov Chain in IDL for sampling of parameter space

HONORS & AWARDS

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|------|---------|---|
| 2018 | 2nd | SC18 Supercomputing Visualization Showcase |
| 2018 | \$75k | 2018 Illinois Distinguished Fellowship |
| 2017 | 1 of 4 | Virginia Tech Rhodes & Marshall Scholarship Nominee |
| 2017 | \$1.4k | Academy of Integrated Science Distinguished Senior |
| 2017 | Top 1% | College of Science Outstanding Senior, Finalist |
| 2017 | Top 7% | Mathematical Contest in Modeling, Meritorious Winner |
| 2016 | \$700 | Astronomy Society of the Pacific Meeting Travel Grant |
| 2015 | \$10k | Wayne & Claire Horton Fellowship |
| 2015 | \$1k | Sigma Phi Epsilon Balanced Man Scholarship |
| 2013 | \$1.5k | Loudoun Future Leaders Scholarship |
| 2012 | 1st/200 | International Space Olympics, Astrophysics Category |
| 2012 | \$1k | Moody's Mega Math Competition, Honorable Mention |

PRESENTATIONS

- 2016 **Using Networks to Measure Impact of Open Source R Packages (Poster & Talk)**
Biocomplexity Institute
- 2016 **Analysis of Globular Clusters in Coma Using HST/ACS data (Poster)**
227th AAS Meeting, Florida
- 2015 **Globular Cluster Systems in Coma (Poster)**
NSF REU Symposium
- 2015 **Elliptical Galaxies in the Coma Cluster with Unusually Poor Globular Cluster Systems (Talk)**
Virginia Honors Council
- 2015 **STEM Education Beyond the Classroom (Poster & Talk)**
Virginia Tech Research Symposium
- 2012 **Exoplanet Detection via Gravitational Microlensing (Talk)**
International Space Olympics, Russia

SOCIETIES & ORGANIZATIONS

- 2017 American Astronomical Society
- 2017 Phi Beta Kappa
- 2016 Phi Kappa Phi
- 2016 Omicron Delta Kappa
- 2014 National Society of Collegiate Scholars

PROGRAMMING

Intermediate:

R • Java • Matlab • C/C++
• Python • Mathematica

Familiar:

Arduino • Fortran • CSS
• IDL • SuperCollider

LEADERSHIP & VOLUNTEER EXPERIENCE

EDUCATION JUSTICE PROJECT | WORKSHOP COORDINATOR

January 2019 – Present | Urbana, IL

- Delivering introductory programming lessons at Danville Correctional Center

UNIVERSE AWARENESS | ASTRONOMY AMBASSADOR

January 2017 – June 2018 | Los Alamos, NM

- Coordinated research talks and stargazing events in Los Alamos
- Pioneered development of sonification modules using Arduino, Ultrasound sensors

THE STORY OF FOUNDATION | EXHIBIT RESEARCHER

December 2016 – December 2017 | Goa, India

- Spearheaded design and implementation of a sound-based astronomy exhibit using Python, Arduino for local outreach, reaching >2k students
- Delivered 2 talks on increasing diversity and inclusivity in astrophysics

ONE LESS STRANGER SOCIAL SOCIETY | Co-FOUNDER

January 2017 – May 2017 | Blacksburg, VA

- Organized campus dinners to foster community, cross-cultural discourse in collaboration with InclusiveVT (<http://www.collegiatetimes.com/news/virginia-tech-group-overcomes-cultural-seclusion>)

COMPUTATIONAL MODELING CLUB | VICE PRESIDENT

August 2016 – May 2017 | Blacksburg, VA

- Fostered intra-major collaboration through student mentorship program
- Oversaw planning and advised teams during 3-day hackathon of 100 students

VIRGINIA TECH ALUMNI ASSOCIATION | DIRECTOR OF SPIRIT

January 2016 – January 2017 | Blacksburg, VA

- Orchestrated rallies and coordinated with student groups, university
- Headed team of 10 to design and market university t-shirt, raised ~ \$9k net revenue (36% increase from previous year)

IAU OFFICE OF ASTRONOMY FOR DEVELOPMENT | INTERN

August 2016 – September 2016 | Cape Town, South Africa

- Designed and instituted secondary school science demonstrations in team of two for National Science Week with SAAO, reaching ~1.2k students total
- Generated 3D-printed gravitational wave models for tactile outreach

VIRGINIA TECH ATHLETICS | MATH TUTOR

January 2016 – May 2016 | Blacksburg, VA

- Educated 2 student athletes on calculus problem sets 2x/week

AMERICAN ASTRONOMICAL SOCIETY | ASTRONOMY AMBASSADOR

January 2015 – January 2016 | Blacksburg, VA

- Prepared outreach with ambassadors nationally during 2-day workshop
- Lectured and hosted stargazing nights at Virginia Tech (English) and Berthe et Jean, Gabon (French)

VIRGINIA TECH CREW TEAM | VICE PRESIDENT, VARSITY CAPTAIN

May 2014 – May 2016 | Blacksburg, VA

- Raced in fastest novice boat, earning three 1st place medals in 1st season
- Motivated team of 40 peers during daily morning practices
- Planned and implemented team fundraising events, raising \$4k/semester