SOPHIE CLARK

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EDUCATION

University of Florida 8/2020 - 12/2024
B.S. in Physics & Astrophysics, *summa cum laude* Cumulative GPA: 3.98/4.0

Thesis: A Three-Dimensional Study of the NGC 1977 Star Cluster Using *Gaia* DR3 and 2MASS
Advisor: Dr. Elizabeth Lada

Relevant Coursework: Advanced Physics Lab 1 & 2, Statistical Mechanics, Machine Learning in Astrophysics, Quantum Mechanics, Essentials of Astrophysics, Computational Astrophysics, Neutron Stars & Black Holes, Techniques of Observational Astronomy, Mechanics 1 & 2, Electromagnetism 1 & 2

RESEARCH EXPERIENCE

University of Florida, Gainesville, FL 1/2021 - present
Undergraduate Research Assistant (Advisor: Dr. Elizabeth Lada)
- Analyzing Gaia & Spitzer data to constrain star cluster parameters & membership
- Developing algorithms to analyze infrared emission & infer the presence of circumstellar disks
- Correlating proper motions in the Orion region to large feedback events
- Presented findings at the 242nd meeting of the AAS and received the Chambliss medal

SETI Institute, Mountain View, CA 6/2024 - 8/2024
REU Intern (Advisor: Dr. Uma Gorti)
- Built a program to interactively model protoplanetary disk wind emission using RADMC-3D
- Integrated theories of MHD outflows into models to determine their origins
- Successfully modeled JWST observation of HH30 H_2 emission to infer mass loss rates & conditions
- Received SETI REU Award of Excellence for best final presentation

California Institute of Technology, Pasadena, CA 6/2023 - 8/2023
Summer Undergraduate Research Fellow (Advisor: Dr. Matthew Graham)
- Analyzed data from TESS to create AGN time series and study variability
- Worked on automating the Quaver pipeline to improve & expedite time series extraction
- Applied existing data from Zwicky Transient Facility (ZTF) as a quality check for TESS time series

PUBLICATIONS

Clark, S. & Lada, E. (in prep.) *A Three-Dimensional Study of NGC 1977 with Gaia DR3 & 2MASS.*
Clark, S. & Gorti, U. (in prep.) *Modeling JWST Observations of Protoplanetary Disk Outflows with RADMC-3D*

HONORS & AWARDS

Astronomy Department Best Thesis Award, University of Florida *2024*
Distinguished Undergraduate Awards Honorable Mention, USRA *2024*
SETI REU Award of Excellence, SETI Institute *2024*
Chambliss Astronomy Achievement Student Award, American Astronomical Society *2023*
University Scholars Program Research , University of Florida *2023*
Phi Beta Kappa, University of Florida Phi Beta Kappa *2022*
President's Honor Roll, University of Florida *2021*
Dean's List, University of Florida *2020-2024*
University Research Scholars Program (URSP), University of Florida *2020*
Florida Academic Scholar, Florida Bright Futures Scholarship Program *2020-2024*

PRESENTATIONS

Modeling JWST Observations of Protoplanetary Disk Outflows with RADMC-3D
1/15/25, The 245th Meeting of the American Astronomical Society, Oral Sessions

Modeling JWST Observations of Protoplanetary Disk Outflows with RADMC-3D
8/9/24, SETI Institute REU Final Presentations
* SETI REU Award of Excellence *

A High-Resolution Study of AGN Variability with TESS
1/10/24, The 243rd Meeting of the American Astronomical Society, Oral Sessions

Applications of Support Vector Machine in the Cosmological Lithium Problem
11/30/23, University of Florida, Machine Learning in Astrophysics Final Presentations

Stellar Dynamics in the Orion Region: A Structural Analysis of the NGC 1977 Region
11/8/23, University of Florida, Fall Undergraduate Research Symposium

Caltech SURF: A High-Resolution Study of AGN Variability with TESS
10/23/23, University of Florida, PULSAR Summer Experience Presentations

A High-Resolution Study of AGN Variability with TESS
8/17/23, California Institute of Technology, SURF Final Presentations

Analyzing the Structure and Motions of the NGC 1977 Cluster with Gaia DR3
6/6/23, The 242nd Meeting of the American Astronomical Society, iPoster Sessions
* Chambliss Astronomy Achievement Student Award *

Stellar Effects of IMBH and SMBH Tidal Disruption Events
11/30/22, University of Florida, Neutron Stars & Black Holes Final Presentations

TEACHING EXPERIENCE

The Art & Science of Astrophotography, IDS2935, University of Florida
Teaching Assistant *Fall 2023, Spring 2024, & Fall 2024*
- Operating one of five refracting telescopes; managing alignment, calibration, setup, and teardown
- Observing sources selected by students and facilitating discussions on the physics behind each of them
- Assisting course instructors in teaching astronomical image processing using Siril

Analytic Geometry & Calculus 2, MAC2312, University of Florida
Learning Assistant *Spring 2022*
- Assisted class of ∼30 students with challenging concepts and problems in a flipped-style classroom

Research & Creativity, HUM2930, University of Florida
Teaching Assistant *Summer & Fall 2021*
- Led groups of freshman students in a semester-long project to create a research proposal
- Coordinated and moderated a panel of faculty researchers
- Presented research experience at two in-class undergraduate research panels

LEADERSHIP & OUTREACH

Department of Astronomy, University of Florida
Outreach Volunteer *2022 - present*
- Mars Closest Approach Event (setup)
- NSF Broader Impacts SEFS Astronomy Event (telescope operator)
- Rosemary Hill Observatory Public Observing Night (telescope operator)
- Girls Do Science (interactive crater-making demo)
- Solar Eclipse Event (distributed solar glasses)
- Rosemary Hill Observatory Open House (telescope operator)

University Research Scholars Program Advisory Board, UF Center for Undergraduate Research
External Director *5/2023 - 7/2024*
- Oversaw five committees and coordinated activities with the Center for Undergraduate Research
- Facilitated communication with URSP students and implemented improvements to the program
Director of Research Seminar Committee *5/2022 - 5/2023*
- Planned, organized, and hosted monthly research seminars showcasing undergraduate research
Research Seminar Committee Member *1/2021 - 5/2022*

Women in Astronomy & Astrophysics Mentorship Program (WAAM), University of Florida
Mentor *9/2023 - 5/2024*
- Mentored two undergraduate students on summer research opportunities and career plans

PROGRAMMING SKILLS

Languages: Python, LaTeX, MATLAB
Systems: Windows OS, Linux/Unix, Git
Applications: data analysis, image processing, MCMC, machine learning
Facilities: Gaia, 2MASS, Spitzer, TESS, JWST

MEDIA APPEARANCES

A Picture is Worth a Thousand Stars, Florida Gator Magazine Fall 2024

Stars in Astronomy visible right here on campus, UF Liberal Arts & Sciences News