Leah M. Fulmer

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Summary

Versatile, open-minded research scientist, software developer, and natural healer with a background in astronomy. Applying diverse computational skills toward my passion for natural health; remaining unattached to the fruits.

Education

Codecademy   January 2024 - Present
Business Intelligence Data Analyst Career Path   Madison, WI

University of Washington   September 2018 - June 2021
Master of Science in Astronomy   Seattle, WA

University of Wisconsin-Madison   September 2013 - May 2017
Bachelor of Science in Astronomy-Physics & Spanish   Madison, WI

University of Chile & Pontifical Catholic University of Chile   February 2016 - August 2016
Council on International Educational Exchange Study Abroad   Santiago, Chile

Academic Distinction, Honors in the Major, Departmental Prize in Astronomy, 3.82/4.00 Cumulative GPA

Professional Experience

BadgerBots Robotics Corporation   May 2022 - December 2023
Community Engagement Program Organizer, Assistant Educator   Madison, WI
Advisors: Johanna Taylor & Janelle Greene

- Lead all communication, coordination, and growth initiatives related to the BadgerBots Community Engagement Program, making robotics education accessible to students of underrepresented backgrounds.
- Connected with community partners at neighborhood centers, libraries, schools, museums, and advocacy organizations to create a program that served the greater Madison area with both breadth and depth.
- Designed season schedule of weekly and monthly partner programming, bimonthly "pop-ups", and parallel learning initiatives with other after school educators, combining educational curricula and service networks.
- Secured funding from both public grants and individual donations to support program activities.
- Managed program budget and presented fiscal activity internally and externally through seasonal reports.
- Served as Assistant Educator during all educational instances, working with the Education Innovator to deliver a quality educational experience; completed administrative tasks for each educational instance.

National Optical Astronomy Observatory, now NSF's NOIRLab   October 2017 - July 2018
Data Reduction Specialist   Tucson, AZ
Advisors: Dr. Stephanie Juneau, Dr. Knut Olsen, & Dr. Mark Dickinson

- Processed and cleaned ("reduced") data from the ESO VLT Visible Imaging Multi-Object Spectrograph and Multi-Unit Spectroscopic Explorer using a boutique reduction pipeline software.
- Produced a catalog of redshift measurements for our population of ∼400 galaxies, laying the groundwork for studies of the galaxies' local environments and large-scale changes in the cosmic star formation rate.
- Contributed to foundational expansions of the Astro Data Lab, a webspace that empowers astronomers to host, query, connect, explore, visualize, and analyze data from all NOIR observational facilities.
- Performed initial development for a new spectral viewer and analysis tool hosted by the Astro Data Lab.
- Synthesized public-facing scientific and technical tutorials to highlight the functionality of the Astro Data Lab's existing tools; tutorials written as Jupyter Notebooks directly querying the Astro Data Lab's archive.

Research Experience

University of Washington — September 2018 - June 2021
NSF Graduate Research Fellow — Seattle, WA
Advisors: Prof. Daniela Huppenkothen and Prof. Mario Juric

- Explored automatic classification of time series data using machine learning techniques; placed particular focus on anomaly detection to efficiently access valuable data products from among billions of observations.

University of Wisconsin-Madison — January 2014 - January 2020
Undergraduate Research Assistant — Madison, WI
Advisor: Professor John (Jay) Gallagher, III

September 2016 - January 2020:

- Lead a photometric study of massive stars within the Small Magellanic Cloud Wing, revealing an erratic, popcorn-like mode of star formation despite an apparent lack of gaseous resources from which to form stars.

January 2014 - October 2016:

- Lead an analysis of the galaxy NGC 5523, constraining the timescales and masses of potential non-disruptive mergers between it and former companions, thus discovering a probable history of "isolation by annexation".

Space Telescope Science Institute — June 2017 - August 2017
Space Astronomy Summer Program Intern — Baltimore, MD
Advisor: Dr. Mark Giuliano

- Created a dynamic visualization tool for the efficient analysis of Hubble Space Telescope and James Webb Space Telescope scheduling constraints, to ultimately streamline the process of space-based data acquisition.
- Collaborated closely with telescope schedulers (users) and quickly adapted the tool to match their feedback.

University of Chile — March 2016 - September 2016
Undergraduate Research Assistant — Santiago, Chile
Advisor: Professor Monica Rubio

- Analyzed CO emission data from the Atacama Large Millimeter Array and Atacama Pathfinder Experiment to characterize physical properties (mass, temperature) of molecular clouds within the Magellanic Bridge.

Yale University — June 2015 - July 2016
Dorrit Hoffleit Undergraduate Research Scholar — New Haven, CT
Advisor: Professor Jeffrey (Jeff) Kenney

- Joined and tidied ultraviolet-through-infrared photometric data for 50 galaxies within the Virgo Cluster.
- Modeled the observational data with theoretical spectral energy distributions and derived physical properties from these models, revealing a common stage of neutral gas accretion among infalling cluster galaxies.

Publications

[1] *Testing massive star evolution, star-formation history, and feedback at low metallicity: Photometric analysis of OB stars in the SMC Wing* **Fulmer, Leah M.**; Gallagher, J. S.; Hamann, W. -R.; Oskinova, L. M.; Ramachandran, V., 2020, A&A, 633, A164. Reproduce analysis using Jupyter Notebooks: Link to GitHub.

[2] *The NOAO Data Lab: Design, Capabilities, and Community Development* Fitzpatrick, M.; Olsen, K.; Eychaner, G.; **Fulmer, Leah M.**; Huang, L.; Juneau, S.; Nidever, D.; Nikutta, R.; Scott, A., 2019, ASPC, 523, 233F.

[3] *Testing massive star evolution, star formation history, and feedback at low metallicity: Spectroscopic analysis of OB stars in the SMC Wing* Ramachandran, V.; Hamann, W. -R.; Oskinova, L. M.; Gallagher, J. S.; Hainich, R.; Shenar, T.; Sander, A. A. C.; Todt, H.; **Fulmer, Leah M.**, 2019, A&A, 625, 104.

[4] *NGC 5523: An isolated product of soft galaxy mergers?* **Fulmer, Leah M.**; Gallagher, J. S.; Kotulla, R., 2017, A&A, 598, 119.

Honors, Awards, & Societies

- Madison Community Grant (awarded to BadgerBots Robotics) : *Madison Community Foundation* — 2023
- Technology Education Grant (awarded to BadgerBots Robotics) : *Technology Education Foundation* — 2023
- NSF Graduate Research Fellowship : *National Science Foundation* — 2020
- Achievement Rewards for College Scientists Fellowship : *ARCS Foundation, Inc.* — 2018
- AAS Education and Professional Development Mini-Grant : *American Astronomical Society* — 2018
- Chambliss Astronomy Achievement Award Honorable Mention : *American Astronomical Society* — 2018
- Doherty Award for Excellence in Astronomy : *UW-Madison Department of Astronomy* — 2017
- Iron Cross Society : *Recognizing significant leadership and service at UW-Madison* — 2016
- Phi Beta Kappa : *Alpha Chapter of Wisconsin* — 2016
- Jay C. Halls Scholarship : *UW-Madison College of Letters & Science* — 2016
- Hilldale Undergraduate Research Fellowship : *UW-Madison* — 2016
- WSGC Undergraduate Research Fellowship : *Wisconsin Space Grant Consortium* — 2016
- WSGC Undergraduate Scholarship : *Wisconsin Space Grant Consortium* — 2016
- Fay Ajzenberg-Selove Award : *UW-Madison Department of Physics* — 2016

Talks, Workshops, & Community Service

- AAS Site Visit Team — 2019 - 2023
  Selected Member : American Astronomical Society : Ithaca, NY
- "Networking in Astronomy" — 2019
  Selected Talk : .Astronomy11 : Toronto, Canada : Link
- Know Your Power Special Session — 2019
  Workshop : Space Telescope Science Institute; 233rd AAS Meeting : Baltimore, MD; Seattle, WA
- AstroSites: How to Build & Publish a Professional Website — 2019
  Selected Workshop & Published Webpage : 233rd AAS Meeting : Seattle, WA : Link
- "How Astronomy's Most Intriguing Discoveries Happen by Accident" — 2019
  Talk : Astronomy on Tap : Seattle, WA : Link
- "Data-Driven Astronomy in the 2020s and Beyond" — 2018
  Talk : Space Drafts; Astronomy on Tap : Tucson, AZ; Seattle, WA : Link
- "Getting Started with the NOAO Data Lab" — 2018
  Selected Unconference Session : Python in Astronomy Conference : New York, NY
- "Seeking Out Mentors and Surviving Disappointment" — 2018
  Podcast Interview : Get This Girl A Job Podcast : Tucson, AZ : Link
- La Serena School for Data Science — 2017
  Selected Participant : Interdisciplinary Summer School : La Serena, Chile
- "A Dynamic Visualization Tool for the Analysis of SPIKE Scheduling Constraints" — 2017
  Talk : Space Telescope Science Institute Summer Symposium : Baltimore, MD : Link (55:15)

Skills

Software Development & Data Analysis:
Python (advanced: numpy, matplotlib, pandas, Jupyter; intermedidate: seaborn, astropy, scipy, scikit-learn);
HTML/CSS/JavaScript, SQL, LISP, IDL, Tableau, Class, CASA, IRAF (apphot, ellipse, galfit), Magphys;
data collection/cleaning, joining multiple data sources, data analysis (tabular, photometric, spectroscopic).

Communication & Collaboration:
GitHub (git), academic publication, public speaking, poster presentation, collaboration with users, networking;
communication with diverse stakeholders, program coordination, grant writing, fiscal responsibility, education.

Natural Healing:
Spiritual practice, daily meditation, Egoscue posture therapy, vision improvement, fertility awareness, sobriety.

World Languages:
Spanish (advanced: speaking, reading, writing).