MATTHEW PORTMAN

CONTACT

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GitHub https://github.com/MatthewPortman/

EMPLOYMENT

Teaching Assistant **2019–Present**
University of California, Irvine | *Irvine, CA*

Graduate Research Intern **2021, 2022**
Lawrence Livermore National Lab | *Livermore, CA*

URA Visiting Scholar **2021–2022**
Fermilab | *Batavia, IL*

Graduate Research Assistant **2017-2019**
San Diego State University | *San Diego, CA*

Adjunct Faculty **2017**
Collin County Community College | *McKinney, TX*

EDUCATION AND RESEARCH

University of California, Irvine **2019–Present**
Ph.D. Candidate | *Advised by Dr. Wayne Hayes*
(joint with San Diego State University)

- Develop a program to pipe results from spiral arm detection software, SpArcFiRe, into GALFIT to automate galactic structure parameterization.
- SpArcFiRe GitHub Repo.

Dark Energy Spectroscopic Instrument Collaboration **2021–Present**
*Collaborator/**URA Visiting Scholar*** | *Supervised by Dr. Antonella Palmese*

- Identify transients from multi-messenger sources using DESI and correlate these observations to confidence interval of gravitational wave localization maps.
- DESIhub Time Domain GitHub Repo

Lawrence Livermore National Lab **2021, 2022**
Graduate Research Intern | *Advised by Drs. Peter Anninos & Rob Hoffman*

- Simulated hyper-accretion inflow onto the surface of neutron stars from a binary companion using COSMOS++ to predict observational (x-ray and gravitational wave) signature.

San Diego State University **2017–2019**
Ph.D. Candidate | *Advised by Dr. Fridolin Weber*
(joint with University of California, Irvine)

- Simulated hyperdense matter inside neutron stars using Fortran.

Rochester Institute of Technology **2015**
Research Experience for Undergraduates | *Advised by Dr. Benjamin Sargent*

- Analyzed photometry of AGB stars in the Large and Small Magellanic Clouds.

University of Texas at Dallas **2012–2016**
B.S. Physics

- Specialization in Astrophysics.

ADDITIONAL PROJECTS

Core Mass Fraction Inference **2022**
*Hack Day, **LSSTC DSFP** Session 16.* | *Northwestern University*

- Infer core mass fraction of the moon using gravitation data via statistical inference.
- GitHub Repo.

Simple SPH Star Model **2022**
*Hack Day, **LSSTC DSFP** Session 15.* | *Harvard University*

- Simulated a simple SPH star model using object oriented methods in Python.
- GitHub Repo.

Simulate Observations of Spiral Galaxies **2022**
*Hack Day, **LSSTC DSFP** Session 14.* | *University of Arizona*

- Used an autoencoder neural network to simulate observations of spiral galaxies.
- GitHub Repo.

Volume Integration using Monte Carlo and Deterministic Methods **2019**
Scientific Computing Class | *University of California, Irvine*

- Compared the two methods to integrate over an n-dimensional cubic volume.

Smoothed Particle Hydrodynamics for Compact Stars **2018**
Parallel Computing and PDE Classes | *San Diego State University*

- Simulated a compact star utilizing SPH and integrated parallel processing via CUDA.
- GitHub Repo

Burgers' Equation in 2D **2017**
Computational Science Seminar | *San Diego State University*

- Modeled the propagation of a 2D Gaussian waveform using Burger's equation by finite differencing methods and Mimetic operators.
- GitHub Repo

AWARDS

LSSTC Data Science Fellowship (DSFP) **2021–Present**
DSFP Fellow | *Northwestern University*
Award granted to supplement data science instruction in Astronomy.

URA Visiting Scholars Program **2021-2022**
Visiting Scholar | *Fermilab*
Award granted to perform collaborative research with Fermilab.

DTEI Summer Fellowship **2020**
DTEI Fellow | *University of California, Irvine*
Award granted for supplemental pedagogical and teaching instruction.

Graduate G-STEM Fellowship. **2017–2019**
G-STEM Fellow | *San Diego State University*
Award granted to provide mentorship and research opportunities.

Research Experience for Undergraduates (REU) **2015**
REU Recipient | *Rochester Institute of Technology*
Research award granted to perform research under Dr. Benjamin Sargent.

Academic Excellence Scholarship (AES) **2012-2016**
AES Recipient | *University of Texas at Dallas*
Excellence award granted for academic performance.

PUBLICATIONS

Articles

M. Portman, S. Mesforoush, and W. Hayes (2023). "A re-assessment of SpArcFiRe's performance on toy spiral galaxies". Under review.

M. Portman and A. Palmese (2023). "A Method to Perform Gravitational Wave Transient Follow-up with DESI". In preparation.

Posters

M. Portman and A. Palmese (2022). "Identifying Optical Counterparts From Follow-Up Of Gravitational Wave Events". ACCESS #18.

M. Portman (2021). "Automated Multi-Component Fitting of Light Models to Observations of Spiral Galaxies". ACCESS #17.

M. Portman and A. Palmese (2021). "Identifying Optical Counterparts From Follow-Up Of Gravitational Wave Events". Sustainable Horizons Institute Sustainable Research Pathways (SHI-SRP) Workshop, Virtual.

M. Portman and W. Hayes (2019). "Physics Based Model for Spiral Arm Detection in SpArcFiRe". ACCESS #16.

M. Portman and F. Weber (2018). "Differential Rotation in Proto-Neutron Stars". ACCESS #15.

M. Portman and B. Sargent (2016). "AGB Stars in the Large and Small Magellanic Clouds". American Astronomical Society Meeting #227. id.144.24.

PROGRAMMING LANGUAGES

Python	OpenMP
Linux/Bash	MPI
MATLAB	CUDA
C++	IDL
Fortran	LaTeX

OTHER INTERESTS

Coffee Aficionado (Home Barista)
Baking (Bread)
Weightlifting
Writing
Film
Fashion