

Matthew Portman

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Website(s): [GitHub](#) and [LinkedIn](#)

Employment

Graduate Teaching Assistant, University of California, Irvine, 2019 – Present.

Graduate Research Assistant, San Diego State University, 2017–2019.

Adjunct Professor, Collin County Community College: McKinney Campus, 2017.

Education and Research

University of California, Irvine

Ph.D. Candidate, Advised by Dr. Wayne Hayes, 2019 - Present.

- Utilize optimization methods to model galactic light profiles via [GALFIT](#).
- Develop an algorithm in Python to pipe results from spiral arm detection algorithm, [SpArcFiRe](#), into GALFIT in order to automate galactic structure parameterization.

San Diego State University

Ph.D. Candidate, Advised by Dr. Fridolin Weber, 2017 - 2019

- Simulated complex physical interactions inside neutron stars using Fortran.

Rochester Institute of Technology

Research Experience for Undergraduates

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

University of Texas at Dallas

B.S. Physics, 2012-2016.

- Specialization in astrophysics.

Computational Projects

Volume Integration using Monte Carlo and Deterministic Methods

Project for Scientific Computing class

University of California, Irvine, 2019

- Compared the two methods to integrate over an n-dimensional cubic volume in Python to demonstrate and understand the value of statistical methods.

Smoothed Particle Hydrodynamics for Compact Stars

Project for Parallel Programming and Partial Differential Equations classes
San Diego State University, 2018

- Simulated a compact star utilizing SPH and integrated parallel processing via CUDA for comparison to previous research.

Burgers' Equation in 2D

Project for Problems in Computational Science class
San Diego State University, 2017

- Modeled the propagation of a 2D Gaussian waveform using Burger's equation by FTCS and Lax-Wendroff finite difference methods and Mimetic operators in order to compare their performance modeling shock formation.

Publications

Proceedings

Portman, M. (2019, April), Physics Based Model for Spiral Arm Detection in SpArcFiRe, Poster Presented at the ACCESS #16, San Diego, California.

Portman, M. (2018, April), Differential Rotation in Proto-Neutron Stars, Poster Presented at the ACCESS #15, San Diego, California.

Portman, M. (2016, January), AGB Stars in the Large and Small Magellanic Clouds, Poster Presented at the American Astronomical Society Meeting #227, id.144.24, Kissimmee, Florida.

Awards

[DTEI Summer Fellowship](#), 2020

[GSTEM Fellowship](#), 2017–2019

[Research Experience for Undergraduates](#), 2015

[Academic Excellence Scholarship](#), 2012–2016

Coding Skills

Python

Fortran

MATLAB

LaTeX

Linux/Bash

OpenMP/MPI/CUDA

Hobbies and Other Interests

Coffee Afficianado (Home Barista)

Weightlifting

Writing

Film

Fashion