Matthew Portman

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Online: GitHub and LinkedIn

Employment

Graduate Research Intern, Lawrence Livermore National lab, Livermore, CA, 2021.

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

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

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

Education and Research

University of California, Irvine

Ph.D. Candidate (joint with SDSU), 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.

Fermilab

URA Visiting Scholar, 2021 – Present

- Identify transients from multi-messenger sources using DESI and correlate these observations to confidence intervals of gravitational wave localization maps.

Lawrence Livermore National Lab

Graduate Student Intern, 2021

- Simulate 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

Ph.D. Candidate (joint with UCI), Advised by Dr. Fridolin Weber, 2017 - 2019

- Simulated hyperdense matter 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

URA Visiting Scholars Program, 2021

DTEI Summer Fellowship, 2020

GSTEM Fellowship, 2017–2019

Research Experience for Undergraduates, 2015

Academic Excellence Scholarship, 2012–2016

Coding Skills

OpenMP/MPI/CUDA

Python

Fortran

MATLAB

Linux/Bash

LaTeX

Hobbies and Other Interests

Coffee Aficionado (Home Barista)

Weightlifting

Writing

Film

Fashion