Preet Patel

440 – Physics Building,
Davis CA 95616

630-715-6148
pbpa@ucdavis.edu

Summary

Highly motivated learner pursuing a career in Astrophysics, research, and academia. I am passionate about research and am pursuing a PhD in Astrophysics. I am use high performance computing to solve problems and explore novel ideas in physics.

Education

University of California – Davis – Davis, CA (2020-Now)
Graduate Degree: Physics and Astronomy

University of Michigan - Ann Arbor – Ann Arbor, MI (2015-2019)
Bachelor of Science: Astronomy & Astrophysics
Bachelor of Science: Physics
Minor: Statistics

Publications

(MNRAS, Submitted) Predictions for Complex Distributions of Elemental Abundances in Low-Mass Galaxies
Preet Patel, Sarah Loebman, Andrew Wetzel

Research Experience & Projects

Student Researcher (06/2019 – 08/2019)
University of California – Davis: Department of Physics – Davis, CA
Continued research from the summer of 2018 at the University of California - Davis. I utilized the Stampede2 supercomputer to analyze simulations of low-mass galaxies simulated using the FIRE-2 code. I identified trends in the α-versus-Fe space of these galaxies that could be traced back to formative events in the histories of these simulated systems. I am currently writing a paper for submission to ApJ based on this research.

Blue Waters Student Intern (05/2018 – 05/2019)
University of California – Davis: Department of Physics – Davis, CA
Intern for the Wetzel Group. I utilized high-resolution galaxy simulations to connect their chemistry and stellar dynamics with observations. I Investigated synthetic low-mass galaxies to propose possible origins. I used the Blue Waters and Stampede2 supercomputers to create visualizations and conduct data analysis.

Astronomy for the Sight-Impaired (05/2016 – 09/2016)
University of Michigan – Ann Arbor: Department of Astronomy and Astrophysics – Ann Arbor, MI
Worked with Sarah Loebman in reaching out to the various people working on making Astronomy accessible to the sight impaired and characterizing the status of ASI in the Americas.

Work

Grad Student Researcher (GSR), 07/2021-Now
University of California: Department of Physics and Astronomy – Davis, CA
GSR with Prof. Andrew Wetzel. Used the FIRE simulations to investigate the history of dwarf galaxies, culminating in a first-author publication.

Teaching Assistant (TA), 09/2020 - 06/2021
University of California: Department of Physics and Astronomy – Davis, CA
Teaching Assistant for Phys 9B in Fall 2020, Phys 7A in Winter 2021, and Ast 25 in Spring 2021.

Grader (Astro 401), 01/2019 – 04/2019
University of Michigan: Department of Astronomy & Astrophysics – Ann Arbor, MI
Graded assignments for Astro 401, a class on exoplanets, taught by Professor Emily Rauscher. I gave feedback to students on assignments and Professor Rauscher on areas where students seemed to struggle in order to aid her teaching.

Grader (Astro 220), 09/2018 – 12/2018
University of Michigan: Department of Astronomy & Astrophysics – Ann Arbor, MI
Graded assignments for Astro 220, a class on recent progress in astronomy, taught by Professor Mark Reynolds. I gave students feedback on their analysis and interpretation of recent papers and talks.

Presentations

AAS Poster: "Predictions for Complex Elemental Abundance Patterns in Low Mass Galaxies", Jan 2020
Presenting the sum of my research from the last 2 years at AAS 235. I presented the characterization of elemental abundance trends in three simulated low-mass galaxies & identified evolutionary fingerprints.
Preet Patel, Sarah Loebman, Andrew Wetzel; FIRE Collaboration
Bibcode: 2020AAS...23516827P

COSMOS Guest Lecturer, July 2019
Invited to speak in a joint lecture about GAIA, the Milky Way, and the Local Group at UC Davis.
Sarah Loebman, Preet Patel

Poster: "Chemical Trends in Simulated Low-Mass Galaxies", April 2019
Continued my analysis of galaxies simulated using the FIRE-2 code. I presented the characterization of elemental abundance trends in simulated low-mass galaxies, and their evolutionary effects on the galaxies.
Preet Patel, Sarah Loebman, Andrew Wetzel

Poster: "Unveiling Thick Disk Formation Through Galactic Simulations", April 2017
Analyzed a MW-mass simulation made using the FIRE-2 code and identified a bimodality in the elemental abundance trend.
Preet Patel, Sarah Loebman, Andrew Wetzel

Accomplishments & Other Awards

Blue Waters Student Internship Program (2019-2020)

- I was accepted to the Blue Waters Student Internship Program in February of 2018. It is coordinated by SHODOR Inc. and funded by NSF; I was one of 20 students selected for the final cadre of the program, which supported my research at the University of California, Davis for the summer of 2018.

4 years on the Indian American Student Association (2015-2019)

- Celebrated and shared Indian culture through various events and gatherings.
- Participated in community service, particularly for Gandhi day in Fall 2016, Fall 2017, and Fall 2018.

President of Saurashtra Patel Cultural Samaj (SPCS) Youth: MI Chapter (2018 – 2019)

- Founded in 1976, SPCS is a cultural organization spanning the entire country dedicated to bringing together Indians from "Saurashtra", a region in Gujarat. I coordinated local youth activities and ensured that they were enjoying their time in the organization and had an active voice as its progeny.

Skills

- Analyzing State-of-the-art Cosmological, Hydrodynamic Simulations
- Visualization of large datasets
- Proficiency in Python, R, and C/CUDA
- Deep understanding of calculus, linear algebra, & some differential geometry.
- Speak English, Gujarati, & proficient in Spanish