Shaan Patel

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shaandpatel.github.io

Education

University of Texas at Arlington — Arlington, TX
- Doctoral Candidate in **Physics and Applied Physics** — Aug 2021 – Present
- Master of Science in **Physics** (GPA: 4.00) — May 2025

Georgia Institute of Technology — Atlanta, GA
- Bachelor of Science in **Physics**, with Highest Honor — Dec 2019

Research Experience

***Researcher,* Exoplanets/Exomoons and Habitability at UTA** — Aug 2021 – Present
- Used python to simulate the orbital dynamics of 3 and 4 body systems
- Acquired and visualized F-type planetary data from the literature
- Published 5 papers concerning exoplanets/exomoons and habitability

***Intern,* SuperCDMS Group at SLAC National Accelerator Lab** — Jun 2019 – Aug 2019
- Worked in the Cryogenic Dark Matter Search (CDMS) group testing the wiring and readout card attached to the He-3/He-4 dilution refrigerator
- Connected a signal analyzer to the readout cable and ran tests using different gains in the amplifiers on the readout card
- Gathered phase and magnitude data from these tests and found key phase oscillation problems in the readout card

***Member*, Numerical Relativity Research Group at Georgia Tech** — May 2018 – Dec 2019
- Ran numerical simulations on binary black hole systems to gather gravitational wave data and assist LIGO
- Compiled code on advanced computing clusters using different parameter files and visualized data output

***Group Leader*, Gravitational Waves Astrophysics Project** — Aug 2017 – May 2018
- Led a group of undergrad researchers in simulating and visualizing binary black holes
- Visualizing apparent horizons from black holes using the VisIt software
- Took data sets and created a video of apparent horizons spiraling and merging

Experience

***Graduate Research Assistant,* UTA** — Jan 2023 – Present
- Ran simulations on orbital stability of exoplanets/moons around F type stars

***Graduate Teaching Assistant,* UTA** — Aug 2021 – Dec 2022
- Taught two 3-hour lab sections for undergrad Physics 2 (E&M)
- Assessed lab reports and held office hours every week

***Analyst*, Investments Committee at GT** — Jan 2017 – Jan 2018
- Participated in one of the largest completely student run portfolios in the country ($1.2 million)
- Put together holistic presentations on companies that the group could potentially invest in

***Finance Intern*, NanoLumens** — Aug 2015 – Apr 2016
- Used financial statements to create comprehensive financial reports for different competitors
- Created a presentation for company executives and employees on mergers and acquisitions and explaining its potential effects on the company

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Publications

Can Moons Exist around the Habitable-zone Planet K2-18b? (1st Author) Jul 2025

- Ran 2,400 N-body simulations showing exomoons around K2-18b would be ejected within ~10 Myr due to rapid tidal migration.

Orbital Stability of Hierarchical 3- and 4-Body Systems with Inclination (1st Author) Jan 2025

- Simulated exomoon systems to confirm orbital stability of candidates
- Explored putative submoons to lay theoretical foundation for future observations

Apparent Diameters of F- to M-type MS Stars as Viewed from HZ Planets (1st Author) Jan 2025

- Investigated the apparent sizes of host stars from different planet locations

On the Age and Metallicity of Planet-hosting Triple Stellar Systems Sep 2024

- Obtained data from the literature on known planet-hosting triple stellar systems

Statistics and Habitability of F-tpye Star—Planet Systems (1st Author) Sep 2024

- Investigated known F-type systems with planets to find those that are in the habitable zone
- Analyzed stellar evolution code output to classify stars as main-sequence or not

An Early Catalog of Planet Hosting Multiple Star Systems of Order Three and Higher Dec 2022

- Made plots and was co-author on a ApJS paper discussing triple/quadruple star systems

Presentations

Exomoon/Submoon Orbital Stability Poster Presentation – UTA Discover Symposium Apr 2025

- Presented a poster based on our paper on 3- and 4-body orbital dynamic simulations

F-type Habitability Poster Presentation – UNT/UTD TEXAS Symposium Mar 2024

- Presented a poster based on our paper on habitability of F-type systems

Exomoon Stability Presentation – Exoplanet Workshop at UTA Mar 2023

- Presented current research on exomoon and submoon orbital stability simulations

Projects

DefCoordML: NFL Play Prediction Aug 2025

- Built ML models to predict NFL offensive plays (pass vs. rush) using historical data, feature engineering, model comparison, and performance metrics (ROC AUC, F1, etc.).

Scholarships

Zell Miller Scholarship (Full Tuition Coverage at GT, ~$35,000)
GAANN Fellowship ($16,447)
Michael and Wanda Ray Scholarship ($8,000)
Edward and Dorothy Perez Endowed Scholarship ($2,000)

Skills

Programming Languages
Python, LaTeX
Frameworks
PyTorch, Scikit-learn, NumPy, pandas, matplotlib, seaborn, Linux Command Line
Communication
Presentations, Leading Research Projects, Technical Writing