JEIMIN A GARIBNAVAJWALA

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EDUCATION

DREXEL UNIVERSITY | PHILADELPHIA, PA

M.S. in Physics *June 2024*

BOSTON UNIVERSITY | BOSTON, MA

B.A. in Astronomy and Physics *May 2021*

RESEARCH EXPERIENCE

WEAK GRAVITATIONAL LENSING |DREXEL UNIVERSITY *Nov 2022 – present*

Research Advisor: Dr. David Goldberg

- Developed a three-stage Python pipeline to measure higher-order weak lensing signals (flexion) and map substructures within galaxy clusters.
- Processed JWST Level-2 imaging data to generate galaxy cutouts, applied **LENSER** software to extract shear and flexion signals, and implemented the **Kaiser–Squires inverse Fourier method** to derive surface mass density maps.
- Validated the pipeline by analyzing **SMACS J0723**, obtaining results consistent with previous studies, and extended its application to the **El Gordo cluster (z = 0.87)**.
- Advanced the project toward **multi-band analyses**, aiming to statistically minimize flexion contamination from galaxy morphologies and improve substructure mapping accuracy.

GALAXY LUMINOSITY FUNCTIONS |BOSTON UNIVERSITY *Nov 2020 – Sept 2022*

Research Advisor: Dr. Tereasa Brainerd

- Investigated **galaxy luminosity functions (LFs)** within clusters to study galaxy properties across different wavelength bands.
- Developed a **Python pipeline** to cross-match the **RedMaPPer** galaxy catalog with the **unWISE catalog** (~2 billion objects), enabling extraction of 3.5-micron absolute magnitudes.
- Computed and compared **luminosity functions** in the red band and 3.5-micron band, providing insights into wavelength-dependent galaxy cluster characteristics.

TEACHING EXPERIENCE

TEACHING ASSISTANT | DREXEL UNIVERSITY

PHYS 102 – Fundamentals of Physics II (Recitation & Lab) *Fall 2024*

- Led recitation sessions for engineering and science majors on electricity and magnetism, guiding problem-solving in electrostatics, capacitors, electric currents, conductors/semiconductors, magnetism, and electromagnetic induction.
- Conducted weekly laboratory sessions: prepared and delivered pre-lab lectures, demonstrated experiments, supervised student work, and graded lab reports.

PHYS 101 – Fundamentals of Physics I (Recitation) *Spring 2023*

- Facilitated recitations on mechanics, including kinematics, Newton's laws, forces, energy, and momentum.
- Engaged students through problem-solving strategies to strengthen conceptual understanding.

PHYS 170 – Electricity and Motion (Recitation) *Fall 2022*

- Taught physics fundamentals to students in non-science disciplines such as Arts and Communications.
- Focused on conceptual understanding and real-world applications of mechanics, electricity, and motion.

- Fostered a collaborative classroom environment that emphasized discussion and intuition over technical detail.

PHYS 171 – Electricity and Motion (Computational Lab) *Fall 2022, 2023*

- Guided students in interactive simulations covering Newton's laws, energy conservation, Coulomb's law, and circuits.

PHYS 176 – Light and Sound (Computational Lab) *Winter 2022*

- Introduced students to optics and wave phenomena through conceptual simulations.

TUTORME

ONLINE INDEPENDENT TUTOR | TutorMe *Aug 2022 – Aug 2023*

- Provided personalized, one-on-one assistance to students in mathematics, physics, and Python.
- Facilitate understanding of subjects by explaining the underlying concepts and providing guidance on assignment problems.

AMERICORPS MEMBERS (ACM) | CITY YEAR

TECHBOSTON ACADEMY | BOSTON, MA *Jul 2021 – Jun 2022*

- Facilitated class discussions and lessons for eight grade students to advance their grasp of algebra involving multiple variables.
- Held office hours to work one–on–one or in group settings with students to improve their learning. Designed and improved learning environment with partner–teacher and Academic Intervention administrator on a weekly basis.
- Organized Extended–Day activities to encourage students' participation in extracurricular activities.

AWARDS

NSF Grant *2024-2025*

College of Arts and Sciences Dean's Fellowship, Drexel University *2022, 2023*

Segal AmeriCorps Education Award, City Year *2022*

LEADERSHIP & ACTIVITIES

PHYSICS GRADUATE STUDENT ASSOCIATION | DREXEL UNIVERSITY

TREASURER *Jul 2023 – Jun 2024*

- Manage the financial aspects to ensure the availability of funds for seamless event execution.
- Collaborated with supervisors to expedite pending payments, guaranteeing smooth event logistics.
- Strategically allocated and tracked financial resources to meet event budgets, optimizing resource utilization.
- Played a pivotal role in securing event locations by reserving suitable venues, enhancing the association's event planning capabilities.

TECHNICAL SKILLS

Programming & Analysis	Python, NumPy, Pandas, SciPy, Statsmodels, Scikit-Learn, Astropy, IDL, JAVA, SQL
Data Visualization	Matplotlib, Seaborn, Plotly, Bokeh,
Statistical Methods	Regression, Hypothesis Testing
Document Preparation	LaTeX, Overleaf, Word, Google Docs
Data Engineering & Formats	CSV, FITS, Pickle, Large-Scale Datasets
Workflow Tools	Jupyter, Google Colab, API Integration
Data Preparation & Processing	Data Cleaning, Outlier Detection, Feature Engineering
Languages	English (fluent), Gujarati (fluent), Hindi (fluent)