

Purva Diwanji

Curriculum Vitae (January - 2025)

General:

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Current Position: Research and Development Scientist, Celdon Solutions Inc., Madison, AL

Education:

Ph.D. in Physics - The University of Alabama in Huntsville, USA	May-2024
M.S. in Physics - The University of Alabama in Huntsville, USA	Aug-2019
M.S. in Physics (Electronics minor) - Gujarat University, India	May-2016
B.S. in Physics (Electronics minor) - Gujarat University, India	May-2014

Experience:

Research and Development Scientist **Jul 2024-Present**
Celdon Solutions Inc., Madison, AL

- As a Research and Development Scientist at Celdon Solutions, I am contributing to the development of Davinci, an AI platform designed to assist system engineers and scientists in managing projects ranging from small-scale initiatives, such as prototyping sensor systems, to large-scale, complex endeavors like CubeSat missions.
- My work involves understanding consumer requirements, validating solutions for technical feasibility and robustness, and integrating innovative features into Davinci based on advancements in technology, ensuring the platform meets the evolving needs of its users.

Part-Time Lecturer **Aug 2024 – Dec 2024**
Department of Physics & Astronomy,
The University of Alabama in Huntsville, Huntsville, AL

- As a Part-Time Lecturer I taught a graduate level class on Mathematical methods in Physics to students pursuing masters/Ph.D. in Physics or Mathematics at UAH.

Graduate Teaching Assistant **Aug 2018 – May 2020 & Aug 2023- May 2024**
Department of Physics & Astronomy,
The University of Alabama in Huntsville, Huntsville, AL

- As a graduate teaching assistant, I have instructed labs ranging from freshman and sophomore level Physics and Astronomy labs to senior level Electronics labs to Physics and Engineering majors. Beyond the lab setting, I helped students by addressing doubts at the Success Center covering a range of undergraduate Physics and Electrical Engineering courses. I have also acted as a grader for numerous undergraduate and graduate courses throughout my tenure.

- In summer 2019, I contributed to enhancing the electronics lab scheduled for the upcoming Fall semester. This involved updating the lab manual, managing inventory, verifying the functionality of components, and ensuring the smooth execution of all experiments. In the following Fall semester, I actively participated in conducting the electronics lab, assumed responsibility for grading lab reports, and played a role in designing exams for the course.

Graduate Research Assistant

May 2020 – Aug 2023

Department of Physics & Astronomy,

The University of Alabama in Huntsville, Huntsville, Alabama, USA

- As a graduate research assistant, under the guidance of Dr. Stephen Walker, I conducted extensive data analysis and modeling, assisted in crafting successful grant proposals, and co-authored research papers in the field of high energy astrophysics.

Teaching Assistant Coordinator

Aug 2019 – May 2020

Department of Physics & Astronomy,

The University of Alabama in Huntsville, Huntsville, AL

- As a Teaching Assistant Coordinator, I overlooked and managed schedules of approximately 14 TAs and took on the responsibility of assigning graders to faculty members.
- I assumed responsibility for assisting in the teaching of sophomore level Physics class. During COVID-19 pandemic I played a pivotal role in facilitating a smooth transition of labs and classes to an online format and designing online finals.

Graduate Teaching Assistant

Aug 2017 – Aug 2018

Department of Physics & Astronomy,

Ohio University, Athens, OH

- As a Graduate Teaching Assistant at the Physics Department of Ohio University, I instructed physics labs for freshman engineering students. My responsibilities included teaching lab sessions, grading reports, and conducting weekly doubt-solving sessions to ensure students' understanding and success in the coursework.

Research Assistant

Jun 2015 – Jun 2016

Physical Research Laboratory, Ahmedabad, Gujarat, India

- Under the supervision of Dr. Raghavan Rangarajan, I contributed to the project: "A Study of the Oscillations of Dark Matter." I conducted comprehensive literature reviews, performed analytical calculations, and actively participated in discussions with fellow scientists in the department.

Technical skills:

Programming and Design: Python, MATLAB, Mathematica, Java Script, IDL, C, AutoCAD

Electronics: Circuit Design, Reliability testing for components and circuits

Material Characterization: Atomic Force Microscopy, Scanning Electron Microscopy, Powder X-ray diffraction, Fourier-Transform Infrared Spectroscopy

Non-Technical skills:

Research grant proposal writing:

- Contributed to the proposal for and successfully secured NASA Chandra AO22 grant for deep observations of the galaxy cluster SPT-CLJ2031-4037.
- Contributed to the proposal for and successfully secured NASA NuSTAR AO06 grant for observations of the galaxy cluster SPT-CLJ2031-4037.

Research Publications:

1. Diwanji, P., Walker, S.A., Mirakhor, M. S., "A rare, strong shock front in the merging galaxy cluster SPT -CLJ2031-4037", ApJ, July 2024.
2. Diwanji, P., Walker, S.A., Mirakhor, M. S., "A rare, strong shock front in the merging galaxy cluster SPT -CLJ2031-4037", AAS/HEAD 2023 Conference, 2023
3. Mirakhor, M.S, Walker, S.A., Runge, J., Diwanji, P. "Possible non-thermal origin of the hard X-ray emission in the merging galaxy cluster SPT-CLJ2031-4037" in MNRAS, October 2022
4. Walker, S.A., Mirakhor, M.S., Diwanji, P. "Is there an Enormous Cold Front at the Virial Radius of the Perseus Cluster," in ApJ, April 2022.

Selected Awards and Honors:

Graduate category:

- **Third Prize** for oral presentation in Three-minute Thesis competition (October 2023) at UAH.
- **People's Choice Award** for Oral presentation in Three-minute Thesis competition (October 2023) at UAH.
- **Nominated** for the UAH College of Science Best Teaching Assistant award (2020), UAH.

Undergraduate category:

- **First prize** for Poster presentation on " Analysis of mechanical properties of nanomaterials using Tait's equation of state" (February 2014) at GUJCOST Science Manthan, P D Patel Institute of Applied Science, Charotar, India.
- **Second prize** for Oral presentation on " Analysis of mechanical properties of nanomaterials using Tait's equation of state" (Jan 2014) at Science Excellence, Gujarat University, Ahmedabad, India.

Conferences & summer school participations:

Mar 2023 - AAS High Energy Astrophysics Division 20th Meeting, Waikoloa, Hawaii.

Feb 2023 - Research Horizon week, The University of Alabama in Huntsville.

Feb 2022 - Research Horizon week, The University of Alabama in Huntsville.

January 2014 – National Science Symposium conducted by the Indian Association of Physics Teachers, Chandigarh, India.

May 2013 - Advanced B. Sc. Physics program - Summer School, Physical Research Laboratory & Institute for Plasma Research, Ahmedabad, India.

May 2013 - Short-Term Experimental Training Program for hands-on research training at the P.D. Patel Institute of Applied Sciences, Charotar, India.

Science outreach activities and volunteer work:

Mar 2023 – Assisted with organizing and conducting “Girls in STEM” held by UAH College of Engineering

Mar 2023 – Presentation of research conducted by Dr. Walker’s group at UAH Undergraduate Science Fair

Feb 2020 – Assisted with science event “Circuits Lab” for high school students.

Oct 2019 – Assisted with UAH College of Science Discovery Day

Feb 2019 – Conducted two workshops for the North Alabama Regional Science Olympiad at UAH

Apr 2019 – Served on the Judges’ Panel for the Alabama State Science and Engineering Fair

Nov 2017 – Conducted science workshops for Ohio University Physics and Astronomy Department Open House

References:

Dr. James Miller,
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Dr. Don Gregory
Distinguished Professor,
Department of Physics and Astronomy,
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Dr. Richard Lieu
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