Richard B. Anderson

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Education

Bachelor of Science in Physics January 2023 - May 2026(Anticipated)
The University of Texas at El Paso Overall GPA: 3.65/4.00

Employment

Undergraduate Research Intern - The University of Texas at Arlington May 2024 - Present
The University of Texas at Arlington Neutrino and Rare Event Searches (NuRES) Group

- Conducted research on *neutrinoless double beta decay* (NEXT experiment), focusing on Beyond Standard Model physics using Effective Field Theory techniques.
- Analyzed S1 and S2 signals to enhance detector sensitivity and performed simulations to study alpha-induced background radiation.
- Automated waveform analysis across large datasets, extracting key parameters like decay constants and peak widths.
- Used the nuDoBE tool to calculate decay rates and electron kinematics, comparing different Wilson coefficients.

Undergraduate Research Assistant January 2023 - Present
UTEP - Astrophysics Theory Group

- Conducting *Astrophysical* research under Dr. Kedron Silsbee, studying the capture rate of planetesimals by collapsing proto-stars.
- Utilized Slurm *High-Performance Computing* cluster to run Python scripts to simulate physical phenomena and analyze subsequent data to come to a physically significant conclusion.
- Utilized knowledge of classical mechanics and mathematics to create analytical models of celestial bodies, as well as statistical predictions of particle motion.
- Presented preliminary findings at the Spring COURI Symposium poster session.

Undergraduate Research Assistant - UTEP Aerospace Center September 2023 - March 2023
UTEP Aerospace Center - Missile Systems Innovation Team

- Effectively employing *Python* machine learning and computer vision packages, such as *OpenCV* and *TensorFlow*, to implement neural networks for object detection and tracking.
- Utilizing drone hardware and *ArduPilot* software for object tracking.
- Experience collaborating with a multidisciplinary team dedicated to utilizing digital engineering techniques to enhance and innovate missile systems, with a focus on achieving *cost-effective solutions*.
- Applied numerical and analytical techniques to calculate ballistic trajectories and optimize missile sizing and design parameters.

Academic Tutor July 2022 - July 2023
El Paso Community College

- Assisted students of El Paso Community College with mathematics coursework in courses ranging from remedial mathematics to differential equations.
- Coordinated with other tutoring team members during high-traffic hours to efficiently and effectively address the high volume of students.
- Utilized both in person tutoring sessions, and navigated online learning interface to deliver online tutoring options for students.
- Proficiently utilized Microsoft Suite programs for seamless communication within the tutoring team and to meticulously track student data.

Skills

C | Python | Fortran | Bash Scripting | Mathematica | Geant-4 | Git | SLURM HPC Clusters | HTML |

Outreach

UTEP Astronomy Club - Secretary January 2024 - Present

- Founding member and officer of the UTEP astronomy club.
- Played a key role in organizing and hosting observational astronomy events, enhancing public engagement with astronomy through educational presentations and night sky viewings.

Awards & Activities

Terry Scholarship: Fall 2023 - Spring 2027

- Prestigious academic scholarship of $25,000 per academic year to outstanding high school seniors on the basis of high academic achievement and leadership potential.
- Participating in up to 15 hours per semester of community service activity in the El Paso community.