William V. Jardee

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EDUCATION

Montana State University, Bozeman, MT
B.S., Summa Cum Laude (Phi Kappa Phi Honors Society), Professional Physics
Minors in, Computer Science and Mathematics, May 2022 GPA: 3.94/4.0

PROJECTS

Relativistic Runaway Electrons and Lightning Discharge; A Qualitative Overview: Building blocks of the RREA Theory, alongside motivations, computational and experimental evidence. Survey of step leaders and the related TGF emissions.

RREA Propagation Theory; A Theoretical and Computational Overview: A delve into the theoredical derivation of RREA theory and the implementation of complete Monte Carlo simulations of particle propegation in stormclouds. *proposed project*

Introduction to Computational Physics A collection of Python, LaTeX, and essential tools, like Jupyter Notebook, overviews along with more detailed delves into important topics like ODE/PDE solvers, Monte Carlo simulations, and large data set analysis. Including asides about AI, ML, TDA, computational theory, and modern topics like dynamical systems. *ongoing project*

TECHNICAL SKILLS

Languages: Python, GitHub, Java, C/C++, LaTeX, HTML, CSS, Matlab, Mathematica, Excel
Mathematics: Linear Algebra, Dynamical/Chaotic Systems, Computation Theory
Physics: Particle Physics, Observational Astronomy, General Relativity

TEACHING EXPERIENCE

Hillman's Scholars Tutor Allen Yarnell Student Success Center
July 2021 - Present Montana State University, Bozeman
Educating underprivileged college students in introductory math, physics, computer science, and humanities courses.

Math Stats Center Tutor Mathematics Department
Aug 2021 - Present Montana State University, Bozeman
Guide students to discover their own answers and understanding in classes ranging from introductory algebra to differential equations.

Proctor/Grader (PHSX 207) Physics Department
Jan 2021 - May 2021 Montana State University, Bozeman
Grading weekly homework and exams of algebra based introductory physics course.

Student Lab Assistant (PHSX 205) Physic Department
Aug 2020 - Nov 2020 Montana State University, Bozeman
Guided students of the introductory physics course through kinematic labs during a weekly lab.

Smarty Cats Tutor Allen Yarnell Student Success Center
Aug 2019 - May 2020 Montana State University, Bozeman
Made and personalized appointments with students to cover essential STEM topics.

Volunteer Stem Tutor The Rock Youth Center
Oct 2019 - March 2020 Montana State University, Bozeman

Held open tutoring hours for high school students who struggles in STEM subjects

RESEARCH EXPERIENCE

Undergraduate Researcher — Dr. John Sample's Lab
Aug 2020 - Dec 2020 — Montana State University, Bozeman
Analyzed the performance of a soft x-ray spectrometer to be attached to the IMPRESS CUBE-SAT.

Undergraduate Researcher — Dr. Rufus Cone's Lab
Jan 2020 - Apr 2020 — Montana State University, Bozeman
Studied the theory behind, and attempted to use, an ellipsometer to measure the thickness of thin wafers.

MISC EXPERIENCE

Club Treasurer — Society of Physics Students at Montana State University
Feb 2020 - Jan 2022 — Montana State University, Bozeman
Handled club finance and lead many efforts in stirring interest in science communication and computational physics.

AWARDS/ GRANTS

Physics Departmental Scholarship
- **Norman Mac Rugheimer Scholarship** — Aug 2021
- **Asbridge Physics Scholarship** — Aug 2020

Montana University Systems Scholarship — May 2018

POSTERS/ PRESENTATIONS

RREA Propagation Theory — Oct 2021
SPS Undergraduate Colloquium

OUTREACH

Grossology — Oct 2021
Museum of the Rockies

Liquid Nitrogen Ice Cream — Oct 2021
Society of Physics Students

Careers in Industry Panel; Moderator — Oct 2020, Mar 2021
Society of Physics Students

INTERESTS

Science communication, computational physics, particle physics, chaotic systems, macroscopic weather systems, RREA propagation theory