Joseph Temple

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Profile

Motivated third-year undergraduate physics student at Arkansas Tech University (ATU) pursuing graduate study and a career in research at the interface of physical science, life science, and engineering. Research interests span from theoretical biophysics to nanobiotechnology to complex systems and nonlinearity. Known for effectively balancing multiple responsibilities, demonstrating an intrinsic motivation to learn, and engaging in collaborative problem-solving.

Education

Bachelor of Science (BS) in Physics *with minor in Mathematics* — *Expected May 2026*
Arkansas Tech University, GPA: 4.0 — Russellville, AR

Bachelor of Arts (BMA) in Music Arts — *Expected May 2026*
Arkansas Tech University, GPA: 4.0 — Russellville, AR

Undergraduate Certificates of Proficiency (CP)
Arkansas Tech University — Russellville, AR

- Computer Programming — *Expected May 2026*
- Vocal Performance — *December 2024*

Research Experience

ATU, Department of Mathematical and Physical Sciences — Russellville, AR
Guided Independent Project (Optical Trap Design) — *January 2025 - Present*
Advisor: Jessica Young

- Designing and constructing an optical tweezer for the department's optics laboratory.
- Exploring theoretical and practical aspects of optical trapping, including laser alignment, and calibration methods

University of Texas at Dallas, Department of Physics — Richardson, TX
Summer Researcher (NSF REU in Physics) — *May 2024 - August 2024*
Advisor: Andrés Cisneros

- Explored machine learning methods to generate molecular potential energy surfaces as a function of atomic coordinates, with hopes of performing geometry optimization for large biomolecules.
- Utilized LICHEM, Psi4, NWChem, and Tinker to perform mixed quantum/classical molecular dynamics simulations and geometry optimization with established methods (NEB and QSM).
- Participated in Python workshops, machine learning seminars, biweekly presentations over research progress, and poster session at culminating summer research symposium.

Related Activities

Physics Laboratory Teaching Assistant *August 2023 - Present*
ATU Dept. Mathematical and Physics Sciences Russellville, AR

- Guided student peers through difficulties encountered in introductory mechanics experiments.
- Graded assignments and lab reports, providing constructive feedback to help students improve their understanding of physical principles.

Peer Tutor *August 2024 - Present*
ATU Tech Learning Center Russellville, AR

- Provided individualized tutoring in math, physics, chemistry, computer science, and music theory.
- Demonstrated strong communication and interpersonal skills in building rapport with students and addressing their academic concerns effectively.
- Lead weekly group review sessions of both introductory and intermediate physics courses through the "Physics Power Hour."

ATU Physics Club *August 2022 - Present*
President *May 2024 - Present*
Vice President *August 2023 - May 2024*
ATU Dept. Mathematical and Physics Sciences Russellville, AR

- Designed and presented an introductory LaTeX lecture series for undergraduate STEM students.
- Facilitated discussions to generate ideas for club events, projects, and outreach initiatives.
- Showcased physical demonstrations to inspire interest in science among the wider campus community.

Technical Skills

Programming Languages: Python (Intermediate), C++ (Intermediate).

Operating Systems: Windows, Linux (Ubuntu).

Techniques: Numerical computing, machine learning, data visualization and analysis.

Software and Tools: LICHEM, Psi4, NWChem, Tinker, Visual Molecular Dynamics (VMD), LaTeX.

Presentations

Poster

1. "Machine learning techniques for potential energy surface generation and geometry optimization of 3D biomolecules." Presented at the University of Texas at Dallas Summer Platform for Undergraduate Research (SPUR), Richardson, TX, August 2024.

References

Dr. Jessica Young, Associate Professor of Physics `jyoung35@atu.edu`

Dr. Jon Clements, Professor of Music `jclements@atu.edu`

Dr. Andrés Cisneros, Professor of Physics, Chemistry and Biochemistry `andres@utdallas.edu`