

James Clifford

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<https://jclifford9.github.io/Website/>

Education	M.A. Physics	expected May 2024
	B.A. Physics, Mathematics	May 2023
	Minor in Materials Science and Engineering	May 2023
	Wesleyan University, Middletown, CT Unweighted GPA: 3.98/4.00	
Research Experience	Molecular Collisions Laboratory	February 2022 - Present
	Wesleyan University	
	Mentored by Dr. Brian Stewart	
	<ul style="list-style-type: none">• Undertook a critical study of our group's experimental and data analysis procedures that involved thermally stabilizing our laser and proposing new methods to reduce noise and uncertainty in our data• Collected data via quasi-classical trajectory simulations to design a series of benchmark experiments in the study of vibrational energy transfer• Learned Gaussian 16 in order to create high-quality <i>ab initio</i> potential energy surfaces to model Li₂-rare gas collisional systems• Delivered a public talk and presented a poster on my preliminary work at the <i>Wesleyan University Undergraduate Summer Research Poster Session</i> (July 2023)	
	Nuclear Structure and Nuclear Astrophysics Group	May 2022 - August 2022
	Oak Ridge National Laboratory	
	Mentored by Dr. Jason Nattress and Dr. Michael Febbaro	
	<ul style="list-style-type: none">• Drafted and conducted a literature search for a paper regarding the optical transparency of graphene in the vacuum ultraviolet (VUV) regime (paper unpublished)• Designed a workflow for the robotic assembly of 3D-printed scintillation detectors• Calibrated and prepared stilbene radiation detectors for experiments at the Institute for Structure and Nuclear Astrophysics at the University of Notre Dame	
	Wave Transport in Complex Systems Laboratory	February 2021 - July 2021
	Wesleyan University	
	Mentored by Dr. Tsampikos Kottos and Dr. Rodion Kononchuk	
	<ul style="list-style-type: none">• Computationally studied Wigner's cusp anomalies in multimode systems for the development of hyper-sensitive, nonlinear sensing technologies• Formally presented this work at the <i>Wesleyan University Undergraduate Summer Research Poster Session</i> (July 2021)	
Relevant Coursework	Physics: Waves and Oscillations, Classical Mechanics, Electricity & Magnetism, Electronics Lab, Statistical and Thermal Physics, Quantum Mechanics (I and II), Nonlinear Dynamics and Chaos, Analytical Mechanics, Condensed Matter (Spring 2024)	
	Mathematics: Multivariable Calculus, Differential Equations, Linear Algebra, Abstract Algebra, Probability, Mathematical Statistics, Real Analysis	
	Materials Science and Engineering: Mechanical Design and Engineering, Electrical Design and Engineering, Mechanics and Materials	

Teaching Experience	General Physics I Course Assistant	September 2020 - December 2020
	General Physics II Tutor	January 2021 - May 2021
	General Physics II Laboratory Teaching Assistant	January 2021 - May 2021
	Classical Mechanics Tutor	January 2023 - May 2023
Programming and Software	<ul style="list-style-type: none"> • Programming languages: Arduino, Bash, C, Python • Software: Adobe After Effects, Adobe Illustrator, Adobe Photoshop, Gaussian 16, Gnuplot, LaTeX, Mathematica, SolidWorks 	
Awards and Honors	Wesleyan University Dean's List (eight semesters)	2019 - 2023
	Phi Beta Kappa National Honor Society	2023
	Wesleyan University Van Dyke Prize (Physics)	2023
Extracurricular Activities	<i>Baseball</i>	2019 - Present
	<ul style="list-style-type: none"> • Starting catcher for the Wesleyan University varsity baseball team • Team captain 	
		August 2022 - Present
	<i>Student Athletic Advisory Committee (SAAC)</i>	August 2022 - August 2023
	<ul style="list-style-type: none"> • SAAC is formed from two leaders of each varsity athletic team on campus and consults with Wesleyan's athletic department and administration regarding NCAA legislation • SAAC also collaborates with other resources on campus, such as the center for counseling and psychological services (CAPS) and the office for equity and inclusion, to help student-athletes along their college experience • Member of the committee on mental health 	
	<i>Student Athlete Support Network (SASN)</i>	September 2019 - Present
	<ul style="list-style-type: none"> • SASN forms peer mental health advocates in collaboration with CAPS • SASN trains student-athletes to help others in challenging situations such as those suffering from anxiety or depression, eating disorders, suicidal thoughts, and more 	
	<i>Miracle League Baseball</i>	August 2019 - March 2020
	<ul style="list-style-type: none"> • The Miracle League brings the joys of athletic competition and being part of a team to children with disabilities and special needs 	