

Will Lancer

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EDUCATION

University of Cambridge <i>Master of Advanced Study (MASt) in Theoretical Physics</i>	Oct. 2026 – June 2027 (expected) Cambridge, UK
Stony Brook University <i>B.Sc. in Physics and Mathematics</i>	Aug. 2023 – May 2026 Stony Brook, NY
• GPA: 3.97 Overall, 3.99 Physics • Honors: Goldwater Scholar, Sigma Pi Sigma (only sophomore inductee)	

EXPERIENCE

Undergraduate Reading Course and Research <i>Simons Center for Geometry and Physics</i>	Sept. 2025 – Present Stony Brook, NY
• Project: Aharonov–Bohm physics in metals and its links to defects in 2D condensed matter systems (advisor: Zohar Komargodski). • Reading course in many-body quantum mechanics and condensed matter physics • Readings in quantum field theory and related topics to further prepare for future quantum field theory research	
Undergraduate ATLAS Researcher <i>Stony Brook University</i>	Jan. 2025 – Aug. 2025 Stony Brook, NY
• Analysis focus: $t\bar{t}H$ with $H \rightarrow c\bar{c}$ (advisor: Hannah Arnold). Implemented charm-tagging preselection and event filters in ROOT/C++; validated MC samples. • Analyzed kinematical data using C++ and machine-learning techniques; produced new selection method for charm quark jets; familiar with SALT flavor tagging. • Ran batch jobs on large datasets; organized outputs and version-controlled analysis code for reproducibility.	
Undergraduate Reading Course <i>Stony Brook University</i>	Oct. 2024 – May 2025 Stony Brook, NY
• Studied Georgi's <i>Lie Algebras in Particle Physics</i> under Martin Roček: weekly problem sets/discussions on representations, Lie groups, and Lie algebras • Audited PHY 610 (QFT I) under Alexander Zamolodchikov through reading course; studied path integrals, effective actions, RG flows, Wilson-Fisher fixed points, etc.	

COURSEWORK & EXTRACURRICULARS

Relevant Coursework

- **Graduate Physics:** Classical Mechanics (PHY 501; A); Classical Electrodynamics (PHY 505; A); Quantum Field Theory II (PHY 611; A); Group Theory for Theoretical Physics (PHY 680; A), Topology in Many-Body Physics and Quantum Field Theory (PHY 680; A), Advanced Statistical Mechanics (PHY 541; A)
- **Mathematics:** Commutative Algebra and Algebraic Geometry (MAT 487; A); Real and Complex Analysis; Abstract Algebra; PDEs; proof-based Linear Algebra
- **Undergraduate Physics:** Modern Physics; Waves & Optics; Electromagnetism I; Quantum Mechanics I; Statistical Mechanics; Scientific Computing; Electronics and Instrumentation Laboratory
- **Teaching Assistance:** Teaching Assistant for PHY 306 (Statistical Mechanics and Thermodynamics)
- **Machine Learning (self-taught):** Karpathy's *Zero to Hero* series; Kaplan's machine learning notes
- **AI safety (self-taught):** reading through many papers in scalable oversight and AI control

Extracurriculars

- Society of Physics Students — Writer of the “Problem of the Week”; regular attendee of talks and meetings
- Wrestling Club; Brazilian Jiu-Jitsu Club — Regular practitioner
- Undergraduate Mathematics Representative — Helped preserve the Math & Physics Library at SBU

TECHNICAL SKILLS AND AWARDS

Programming Languages and Frameworks: C++, Python, PyTorch, Numpy, ROOT

Tools: Git, L^AT_EX, Monte Carlo workflows, ROOT-based data wrangling/ plotting

Additional Honors: Presidential Scholarship, Dean's List (every semester), URECA Summer Fellowship (\$6k); URECA Researcher of the Month (Oct. 2025)