Garrett William Chong

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EDUCATION

New Trier High School, Winnetka, IL – Class of 2025
GPA: 5.22 weighted / 3.92 unweighted
ACT: 35
PSAT/NMSQT: 1500 out of 1520 (National Merit Qualifier)
SAT: 1580 (790 Reading / 790 Math)
AP Exam Scores: AP Calculus BC 5, AP Calculus AB 5, AP Computer Science 5, AP Biology 5, AP Language and Composition 4, APUSH 4, AP Chemistry (tbd), AP Physics C: Electricity and Magnetism (tbd), AP Physics C: Mechanics (tbd), AP Macroeconomics (tbd), AP Microeconomics (tbd), AP Literature and Composition (tbd)

AWARDS AND HONORS

- 2nd place award at the National AAPT (American Association of Physics Teachers) Winter Conference 2x (one for two different publications) in undergraduate research section (2024)
- Board of Education Excellency in Accomplishments award (x2) for particle physics research (2024)
- Robotics: FIRST Technical Challenge (FTC) State Champions 2x (2nd pick winning alliance 2023, captain of winning alliance 2024), World championship 2nd Place THINK Award (2024)
- National Merit Scholarship Semifinalist (2024)
- National Latin Honor Society inductee (2022, 2023, 2024)
- National Latin Exam Maxima Cum Laude (2022); Magna Cum Laude (2023)

ARTICLES AND NEWS PUBLICATIONS

- “Two New Trier juniors take second place for college-level research at national conference” (Wilmette Living Magazine, April 2024)
- “Students Present Research on National stage” (The Record Northshore, March 2024)
- “New Trier Green forward Garrett Chong blends his three passions: hockey, physics, and robotics” (USA Hockey Amateur Hockey Association of Illinois Magazine, April 2024)

SCIENTIFIC RESEARCH AND PROGRAMS

Prof. Geraci Research Group, Northwestern University (2024)
High school intern with the Geraci Research Group, Center for Fundamental Physics

- *Independently designed and built novel photodetector for the Cryo-tweezer experiment*

- *Worked with PhD students on ultra-high resolution laser beam profile measurement*

Independent Group Research – GoCosmic Research Group (2021-2023)
Collaborative research across multiple high schools utilizing QuarkNet cosmic ray detectors searching for the muon shadow cast by the moon. Presented at the 2024 AAPT Winter Conference.

- *Tested muon particle flux at different portions of the sky in the 2-200 GeV energy range using 5 cosmic ray detectors*
- *Calibrated and operated muon detectors over 15-month period, collecting, uploading, and analyzing data weekly to locate the position of the moon's cosmic ray shadow*

Independent Personal Research: "The holes in our universe: beyond the Standard Model" (Summer/Fall 2023)
Published in the National Journal of High School Science (2024)

- *Research paper exploring gaps in current theoretical models of physics*
- *Extensive review and comparison of consumer level articles to more technical papers published by research laboratories and universities*
- *Specific topics include baryogenesis, dark matter, and gravity*

University of Chicago Summer Immersion Program (Summer 2024)

- *Selected for a resident summer program at UChicago*
- *Attended college credit course focused on quantum mechanics and the fundamental interactions in particle physics*

Cambridge Centre for International Research (2023)

- *Highly selective program focused on Electrodynamics, Special and General Relativity*
- *Strong technical focus on code development (Python, Java) for data analysis*
- *Created a Boris pusher, a Vay pusher, and currently working on a geodesics integrator*

Center for Interdisciplinary Exploration and Research in Astrophysics (CIERA), Northwestern University (Summer 2023)

- *Selected to attend an in-person summer program*
- *Developed key skills in scientific research through exposure to real-life labs, core skill development (e.g. Python coding), and deep-dive lectures around current topics in astrophysics*

ACADEMIC CLUBS

New Trier Physics Club (2024)
Founder, President

- *Built a physics community at high school of 4,000+*
- *Led outreach campaigns and secured speakers (e.g., Argonne National Laboratory)*
- *Grew membership from 3 at launch to over 20 members*

FIRST Tech Challenge Robotics Competition Team (2022, 2023, 2024)
Chief of Design
1st place regional (2022-2023) and 1st place state (2022-2023)

- *Lead designer / builder of competition robot hardware, specifically arm and grip actuation sub-systems*
- *Helped drive over 700 collective team hours of community outreach*

- *Mentored younger FTC teams in design, math and engineering concepts, and competition strategy*

PASSIONS, INTERESTS AND SKILLS

Small Form Muon Detector Build

- *Scratch build of a portable muon detector, based on MIT's CosmicWatch design*
- *Sourced all components, PCB; built, programmed, and troubleshoot*
- *Learned to solder, and taught myself to read/interpret PCB designs*

Computer Languages and Coding

- *Python (high proficiency); Java (medium proficiency)*

COMMUNITY AND LEADERSHIP

Philoso-physics.com (2023, 2024, 2025)

Founder of non-profit organization dedicated to creating a meaningful dialogue around the ethical and moral implications of modern science.

- *Interviewed leading thinkers (university philosopher, sociology professor, physics educator)*
- *Addressed practical issues of policy and oversight in scientific research by bringing together writings from around the web*
- *Created 10-session summer program for middle and junior high school students, introducing young minds to both advanced physics as well as the moral and social considerations of science through lectures and discussions.*

New Trier High School "Bridge Builder" Program (Fall 2023)

- *Highly selective appointment given to Juniors to mentor a sophomore homeroom cohort of 23 students*
- *Lead a full class of students 3x a week through their transition to the 10^{th}-12^{th} grade campus*
- *Heavily rely on interpersonal skills to foster relationships with each student and understand their personal needs and goals in order provide support and direction transitioning to 10^{th}-12^{th} grade campus*
- *Topics focused on acclimation strategies, academic navigation, peer relationship building, and anything else to help students position for academic and social success*

Advisory Constituency Board "ACB" (2021-2022)

- *Selected as sophomore class representative to the student council board on school issues, proposed solutions, and provided input on other aspects of the school's culture*
- *Issues ranged from quality of life (e.g. shortening lunch lines, lack of seating, homework/stress load on students) to impact of larger organized events such as school wide service projects*

Academic Assistance Center Math Tutor (2023-2024)

- *Selected by math department to tutor peers on campus 2 class periods weekly*

Glencoe Math Circle (2021-2023)

Volunteer Tutor, 2hrs weekly during school year

- *Taught a small class of 3-8 students ranging in age from 1st to 6th grade*
- *Topics included basics such as multiplication, division, and geometry, as well as more complex topics such as permutations and combinations*

GLASA "Great Lakes Adaptive Sports Association" SLED Ice Hockey (2022-2023; 2023-2024)

Volunteer, 1 1/2hrs weekly during season

- *Volunteer ice hockey program for disabled players who use specialized equipment to play hockey*
- *Helped players get into the sleds and onto the ice, assisted in skating/moving around by pushing players in sleds, and general facilitation of the practice*

Youth Hockey Assistant Coach (2023-2024)

Volunteer, 2hrs weekly during season

OTHER ACTIVITIES

Additional Academic and Enrichment Programs

- *Fermilab's 10-week Saturday Morning Lecture Series (Spring 2023)*
- *Stanford ULO Math Circle (Fall 2023)*
- *AoPS Python course (Spring 2023)*
- *Calder Classics Ancient Greek course (Summer 2021 and 2022)*
- *Tufts University "Introduction to Philosophy" college credit course (Summer 2024)*

Ice Hockey (Forward, Left Wing)

- *Top New Trier High School Varsity "Green" Team (2023-24)*
- *Chicago Reapers AAA Hockey Club (2021–2022; 2022-2023)*
- *USHL (United States Hockey League) camp invitee (2021, 2022)*
- *AHAI (Amateur Hockey Association of Illinois) combine invitee as a top 36 forward in IL (2021, 2022)*

Baseball (Catcher)

- *New Trier Baseball Team (2022, 2023)*
- *Umpire youth baseball (spring and summer)*

Music (Drums)

- *Enjoy playing with various bands at local venues and with family as time allows*