CLAIRE CHEN

UC Berkeley Astrophysics '25

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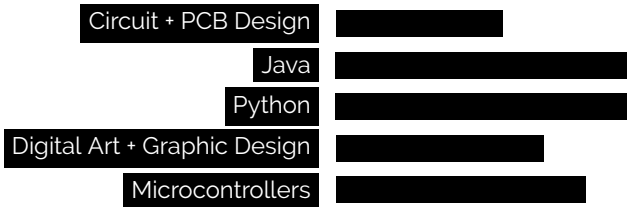
WHO AM I?

I'm an undergraduate physics and astrophysics student at UC Berkeley. I'm passionate about arts, science, and engineering, and my dream is to apply all three to explore space and discover more about the universe. My research interests are in developing electronics and intelligent systems to help humans explore and discover space. Other topics I am interested in are planetary formation and how solar systems develop, the large-scale structure of matter in the universe, and black holes.



RESEARCH EXPERIENCE

2022 - present **Undergraduate Researcher - COSI Mission** **UC Berkeley Space Sciences Laboratory**
Working on designing and creating instruments and electronics to measure gamma-rays and high-energy particles as part of the Compton Spectrometer and Imager (COSI) mission.
`Altium Designer / LTSpice / Onshape`

2021 - 2022 **Undergraduate Researcher - GNOME @ Berkeley** **UC Berkeley**
Set up and maintained atomic magnetometers as part of a global network searching for axion-like particles as dark matter candidates. Currently participating in a science run and data analysis for publication.
`C++ (Arduino) / Lasers / Data Analysis`

2019 - 2021 **Searching for Habitable Small Planet Candidates with a Deep Neural Network** **STTP**
Developed methods to find Earthlike exoplanets by utilizing neural networks and GPU processing, resulting in the identification of 2 new possible exoplanet candidates. Presented at Regeneron Science Talent Search and recognized by SETI at Synopsys Science Fair.
`Python / Jupyter Notebook / C++ (CUDA) / Keras + Tensorflow`

ORGANIZATIONAL EXPERIENCE

2021 - present **Avionics Engineer + Graphics Designer - Space Enterprise at Berkeley** **UC Berkeley**
Designed PCBs and electronics as part of a project to build and fly a liquid bipropellant rocket. Currently working on designing flight system boards and system integration, as well as merchandise design, branding, and outreach.
`PCB Design / Altium Designer / LTSpice / Inkscape + Autodesk Sketchbook`

2017 - 2021 **Tech Lead & VP of Development, Homestead Robotics** **Homestead High School**
Led design of high level software, control and electrical systems. Worked with over 30 students in designing, building, and testing robots to compete in the FIRST Robotics Competition; received the Innovation in Control Award and KLA Creativity Award for robot system design and controls, among others.
`Java / Python / OpenCV`

OUTREACH & TEACHING

2022 - present **Teaching Assistant - Introduction to Python DeCal** **UC Berkeley Astronomy**
Teaching lectures, creating curriculum, and assisting in the operation of a student-run Python programming class.

2019 - 2021 **Workshop Presenter - Western Region Robotics Forum** **Homestead High School**
Taught workshops on control theory and programming for robotics to 40+ high school and middle school students from local communities.

2019 - 2021 **Tech Workshops - Homestead Robotics** **Homestead High School**
Developed curriculum for programming, control, and electronics workshops for members of high school robotics team (50+ students). Organized projects focusing on autonomous driving and computer vision, and created libraries and "minibots" platform to help facilitate teaching.

PERSONAL PROJECTS

2021 - **Quasi-Continuous Wave Tesla Coil**
Designing and developing a more optimized version of a double resonant solid state Tesla coil from the ground up
`PCB Design / Altium / LTSpice`

2018 - 2021 **Coilgun Development**
Development of single and multi-stage coilguns from the ground up, and analyzing efficiency and barrel velocities achieved with different designs.

LANGUAGES

English - native
Mandarin Chinese - native
French - rudimentary
Russian - rudimentary

RESEARCH INTERESTS

Space exploration and spaceflight - especially exploring other planets
Robotics - adaptive designs and organic inspiration
Distribution of matter in the universe - dark matter, large-scale structures, development of galaxies
Exoplanets and planetary systems - formation, geology of terrestrial exoplanets, and detection

HOBBIES

Art - digital & traditional painting, origami, and sketching. Experience in freelance digital art.
Electronics - Tesla coils, electromagnetic accelerators, and wearables
Music - piano, violin
Tabletop gaming - D&D player Call of Cthulhu GM, worldbuilding and homebrew