

Charles (Charlie) Sowerby

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Education

June 2021 (Expected) **University of California, Los Angeles** - Bachelor of Science
Majors: Physics (B.S.) & Mathematics (B.S.)
GPA: 3.64/4.00
Relevant Coursework: Modern Physics Laboratory, Electricity & Magnetism, Thermodynamics, Quantum Mechanics, Graduate Plasma Physics (In progress)
Honors: College Honors (2017-Present), Deans Honors List (Fall 2017, Winter-Spring 2020)

June 2017 University of Chicago, Laboratory Schools (High School)

Technical Skills

Technical Circuit design, Soldering, Raspberry Pi/Arduino Programming, Computer Aided PCB Design
Equipment Oscilloscope, Pulse Generator
Computer Python, C++, \LaTeX , Mathematica, Matlab, HTML/CSS, Microsoft Office
Mathematical Numerical solving of nonlinear partial differential equations

Research and Lab Experience

For more information on my research visit my [website](http://charlie.sowerby.com)

Aug-Nov 2020	Eigenmode Solver <i>Basic Plasma Science Facility, UCLA</i> <ul style="list-style-type: none">Reformulated a simplified electrostatic version of the Braginskii two-fluid equations to include electromagnetic corrections.Modified an existing linear eigenmode solver to incorporate the derived corrections and used the finite difference method to numerically solve these PDE's.Implemented this eigenmode solver to simulate plasma turbulence in the Large Plasma Device at UCLA and compared it with actual data.
Mar-Aug 2020	Plasma Imaging <i>Basic Plasma Science Facility, UCLA</i> <ul style="list-style-type: none">Programmed inexpensive Raspberry Pi/Arduino Camera Modules to capture images of plasmas on timescales of less than 100ns.Experimentally determined the best hardware and method for capturing images with minimal latency and jitter using a Pulse Generator.
Mar-Jun 2019	Relay Circuit <i>Basic Plasma Science Facility, UCLA</i> <ul style="list-style-type: none">Designed and soldered my own remotely controlled relay circuit to be used for adjusting resistors in a Langmuir ProbeProgrammed a Raspberry Pi to control the circuit and implemented a network socket connection to the lab computer for easier control.Modeled a digital PCB using Altium's CircuitMaker to be printed to minimize physical space occupied by the circuit.

Academic Experience

Mar-Oct 2020	Independent Study in Smooth Manifolds <i>UCLA Mathematics</i> Studied graduate-level Smooth/Riemannian Manifolds with the help of UCLA graduate student Nicholas Boschert , using texts by John Lee: <i>Smooth Manifolds</i> and <i>Riemannian Manifolds</i> as reference.
Winter 2020	Undergraduate Grader <i>Physics 131A</i> Graded homework assignments for upper-division class Physics 131A: Mathematical Methods in Physics.
Spring 2019	Peer Reviewer <i>Undergraduate Science Journal, UCLA</i>

OTHER SKILLS

Languages	Conversational German
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