

LIAM S. CARLS

262-865-8278 | lcarls@uoregon.edu | [Linkedin](#) | [Portfolio website](#)

EDUCATION

Master of Science in Applied Physics (M.Sc.)

Sept 2024

Knight Campus Graduate Internship Program, Semiconductor & Photovoltaic Device Processing
University of Oregon, Eugene, OR

Bachelor of Arts in Physics (B.A.) | Summa Cum Laude

May 2023

Minors in Mathematics & Meteorology/Climatology
Carthage College, Kenosha, WI

- Distinguished Senior Award, delivered the class address at commencement.

RESEARCH & INTERNSHIP EXPERIENCE

Sustainability Intern, Event Organizer | Campus Green Team

Sep 2021-May 2023

Carthage College, Kenosha WI

- To educate, encourage, and bolster environmental consciousness across the campus and broader community, organized productivity action item agendas in preparation for leading weekly meetings for the [inaugural](#) and the [second annual Carthage Sustainability Summit of April 2023](#) in collaboration with 5 other students. Assembled up to 13 speakers as director of the speaker outreach committee through networking and coordinating meetings to recruit potential speakers with sustainability expertise, and programmed logistics with event staff to reserve space, tables, handle catering, and prepare 4 break-out rooms with proper speaker equipment.
- Reduced student move-out waste, and provided items for campus members, by establishing and maintaining the Carthage College Reuse House, a place for all students to donate or retrieve housing and studying supplies. Organized and hosted donation stations around campus and kept an online inventory of multiple types of donated items.

Researcher, Engineer, Project Manager | Wisconsin Space Grant Consortium (WSGC)

Jun 2020-Jun 2022

Carthage College, Kenosha, WI

- Spacecraft Propellant Management Project: Funded by NASA and collaborated with Embry-Riddle Aeronautical University on the Magneto-active SLOSH Control (MaSC) project. Developed a novel approach to mitigate propellant sloshing by applying a magnetic field gradient to stabilize a ferromagnetic slosh-damping membrane within a 1:100 scale cylindrical propellant tank.
- Investigated and found an optimal slosh control system for MaSC, by developing experimental methods for gathering coil-membrane magnetic interaction data after sourcing materials, utilizing Autodesk Inventor and FDM 3D printing to build a system of electromagnets and a ferromagnetic membrane with materials and geometries that differed from prior project iterations.
- Prepared MaSC for 10 minutes of 0 G membrane displacement and coil current data collection on board [Zero-G's](#) parabolic flight campaign by disassembling the previous experiment's tanks and tubes to integrate MaSC's Swagelok flow loop and slosh control system.
- Improve and optimized the slosh control force of the membrane for the MaSC project, through advising 5 students in designing experiments to gather magnetic force data on multiple membrane designs with 3 different types of coil configurations and supervised modeling simulations of coil geometries using Autodesk Inventor, EMWorks EMS and Python.

Solar Installer, Production Assistant, Apprentice Electrician | Production and Repairs Crew

Jun 2022-Aug 2022

Solar installation company, [Solar Sam](#), Columbia, MO

- Met time and monetary constraints set by company and clients by cohesively working with a team of 4 installers and 2 electricians to map out and install solar arrays and EV chargers for residential and commercial locations. Additionally performed maintenance, troubleshooting, and led a team through repairs on malfunctioning solar array circuits using a multimeter and an array schematic.
- Enabled the solar array project-oversight team to calculate economic and power capability predictions of client locations by using a solar pathfinder instrument to record clients' annual solar exposure data and integrating it into the engineer evaluation software, System Advisor Model.

INVOLVEMENT & ADDITIONAL WORK

Club President, Vice President | Society of Physics Students

Sep 2019-May 2023

Carthage College, Kenosha, WI

- Built community for and introduced learning experiences to the physics student body by organizing and hosting events including an alumni led LinkedIn and networking workshop, graduate school workshop, moonrise viewings, movienights, and presented planetarium shows.
- Aided in exposing students to career and academic options for after college through devising the itinerary and budget for group trips to conferences such as the 100th year celebration of the National Physics Congress (Physcon 2022) hosted by SPS National in Washington DC, the Conference for Women in Undergrad (CUWiP 2023) at Argonne National Laboratory, and a chapter field trip to Fermilab.
- Kept the club up to date on internship and research opportunities, upcoming and current events, and conferences, by creating and presenting slideshows at bi-weekly meetings.

Cart Running and Grocery Bagging | Guest Services

Oct 2020-May 2021

Festival Foods Grocery Provider

- Ensured efficient checkout times by being responsible for bagging groceries, restocking bags, and helping store guests to their vehicles with grocery items as a guest services associate with the goal of providing each guest with swift, careful, and effective service.
- Assisted in maintaining guest satisfaction by managing the level of carts available while routinely monitoring and using hydraulic press to pack cardboard from the recycling pile, and finding a time each shift to re-bag each trash bin in the store while completing trash pickup route.

Carpenter Assistant | General Carpentry and Contracting Crew

Jul 2020-Aug 2020

Eric Herrmann Construction

- Maintained company-required production level by aiding in projects that involved re-mounting, and painting cedar wood siding on residential homes under the leadership of a master carpenter with a 5 person crew.
- Ensured maximum productivity and allowed the master carpenter to start new projects by taking on responsibilities that involved measuring precise angles and lengths of boards, operating a table saw, nail gun, and impact driver.

AWARDS & HONORS

Carthage College Distinguished Senior Award

May 2023

- Separately nominated by 3 faculty members, recognized for high academic achievement, service to the campus community, leadership in student organizations, and active engagement beyond the campus.

Alan Anderson Presidential Scholarship Recipient

Sep 2019-May 2023

- This scholarship, totalling \$108,000, is awarded to students who display outstanding communication skills and academic excellence through Carthage College's Lincoln Scholarship competition.

Faculty Honors Scholarship Recipient

Sep 2022-May 2023

- Nominated by Dr. Kevin Crosby, recognition of academic achievement and merit

Carthage College Dean's list scholar

Dec 2019-May 2023

WSGC Undergraduate Research Scholarship Award Recipient

Sep 2020-May 2022

Barbara Campbell Annually Funded Scholarship Recipient

Sep 2020-May 2021

- Carthage College Academic Excellence Awards Program, recognizing outstanding achievement

PRESENTATIONS

Research Project Poster | Wisconsin Space Conference at Milwaukee School of Engineering (MSOE)

Aug 2021

- Poster title: Magneto-active SLOSH Control: Active Propellant Management and SLOSH Prevention

Research Project Overview | Wisconsin Space Conference at MSOE

Aug 2021

- Presentation title: Carthage College Space Science Projects Overview

Research Project Poster | Carthage College Celebration of Scholars Event

Sep 2020

- Poster title: Magneto-active SLOSH Control: Active Propellant Management and SLOSH Prevention