Charles Dalton

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Education

University of Florida **Aug 2023 – Present**
Bachelors of Science in Nuclear Engineering GPA: 3.90/4.00
Bachelors of Science in Physics

Research

Oak Ridge National Lab Research Intern (SULI) **May 2026**

UF Optical Diagnostics Research Assistant — Hartig Lab **Dec 2025 – Present**

- Conducted advanced optical diagnostics including laser-induced breakdown spectroscopy (LIBS), to characterize materials relating to nuclear environments.
- Collected data on Al and Al_2O_3 and for plume vorticity analysis.
- Working with data for machine learning algorithms for better material characterization.

NCSU Research Assistant (REU) **May 2025 – July 2025**

- Built custom Sample Analysis by Light Transmission (SALT) furnace for UV–Vis and THz-TDS spectroscopy.
- Configured optical system and conducted UV–Vis spectroscopy on molten CILiK eutectic and nitrate salts.
- Applied CFD modeling to optimize furnace design and validate thermal performance.

UF Materials Engineering Research Assistant — Jung Lab **Jan 2024 – Aug 2025**

- Gas Chromatography–Mass Spectrometry experimentation on manufactured plastics.
- Independent research on the effects of UV aging on plastic composites under UV exposure.
- GC–MS experimentation on samples collected across UF campus.

Presentations

- **Dalton, C.** & Bataller, A. *Furnace Design and STrAW Method*. Advancing Fundamental Molten Salt Modeling Using Ultrafast Spectroscopy NEUP Annual Review Meeting, Raleigh, NC, July 2025. Oral Presentation.
- Sedio, S., Paulson, D., Ritchie, J., **Dalton, C.**, & Jung, S. *Investigation Into the Effects of Location on Microplastic Composition on the University of Florida Campus*. UF Undergraduate Research Symposium, April 2024. Poster Presentation.
- **Dalton, C.** & Magomo, D. *Smooth Transition Functions in Multiple Dimensions*. Florida Undergraduate Research Conference, Miami Gardens, FL, February 2023. Poster Presentation.

Leadership/Activites

American Nuclear Society Mentor **Aug 2025 – Present**

- Provide academic, professional, and research guidance to undergraduate mentees in nuclear engineering.

Society of Physics Students Member **Aug 2025 – Present**

- Promote physics and present concepts to Alachua County Public schools.

Honors & Awards

- University Scholars Program
- UF Honors University Research Scholars Program Scholarship
- Florida Bright Futures FAS Scholarship
- NEUP R&D Award

Skills and Academics

Skills: Spectroscopy, Optics Alignment, CAD, Java, Javascript, LaTeX, Python, C++, Matlab, Git, EES

Coursework: Statistical Mechanics, Solid State Physics, Electrodynamics I & II, Quantum Mechanics, Thermal Physics, Linear Algebra, Modern Physics, Theoretical Physics, Statics, Mechanics of Materials, Thermodynamics, Fluid Dynamics, Heat Transfer, Programming 1 & 2