ROBERT 'BOB' CADDY

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EDUCATION

University of Pittsburgh, PA *2018 - current*
Ph.D. Physics

Bowling Green State University, OH *2016 - 2018*
M.S. Physics

Purdue University, IN *2012 - 2016*
B.S. Honors Physics Major, Astronomy Minor

TECHNICAL & PROFESSIONAL SKILLS

Programming Languages:	C++, Python, Fortran, Bash
Packages & APIs:	MPI, CUDA, OpenMP, OpenACC, Numpy, Pandas, Scipy, Matplotlib, Astropy, C++ STL
Software Tools:	LaTeX, git, GCC, Make, HDF5, HSI, PBS/Slurm, DAOPHOT, IRAF, SQL, Doxygen, GoogleTe
Hardware:	Optics, Digital holography, Electronics
Communication Skills:	7+ years of experience as a teaching assistant

EXPERIENCE

Graduate Research Assistant *2018 - Present*
University of Pittsburgh, Pittsburgh, PA

- Expand Cholla, a massively parallel GPU-accelerated code for simulating astrophysical fluid dynamics to include magnetic fields.
- Develop, optimize, and expand Cholla to interface with next-generation exascale supercomputers such as Frontier.
- Collaborate with the Frontier Center for Accelerated Application Readiness (CAAR) program to optimize the world's first exascale computer for data-intensive simulations for scientific applications.
- Develop and implement a robust testing framework for Cholla utilizing existing frameworks with custom extensions for Cholla
- 2022 International High Performance Computing Summer School (IHPCSS), Second place in the programming challenge

Graduate Research Assistant *2016 - 2018*
Bowling Green State University, Bowling Green, OH

- Conducted original thesis research into the properties of symbiotic star V1835 Aql with Professor Andrew Layden as advisor.
- Determined the general properties and causes of variability of a symbiotic star system through image and data analysis in Python.

Undergraduate Research Assistant *2015 - 2016*
Purdue University, West Lafayette, IN

- Built an experimental optics system to observe the effect of various chemotherapy drugs on cancer tumors.
- Laid the groundwork for a fully automated system to upload terabytes of experimental data for analysis on Purdue's supercomputing cluster, backup raw and analyzed data to Purdue's high performance storage system, and download a local copy for further investigation; this reduced data processing time per experiment from 10 hours to 30 minutes.
- Developed a system to organize the research group's historical data that reduced backup time per experiment from 6 hours to 20 minutes.

President, Purdue Society of Physics Students (SPS) *2015 - 2016*
Purdue University, West Lafayette, IN

- Tripled the number of active members and increased profits of the club store by 500%.

- Coordinated biweekly events and activities such as designing and constructing a weather balloon payload with SPS National funding, inviting guest speakers for special colloquia, and visiting Argonne National Lab.

HONORS & AWARDS

- **Argonne Training Program for Extreme Scale Computing** (ATPESC) 2022
- **International High Performance Computing Summer School** (IHPCSS) 2022, Second place in the programming challenge
- **Learning Beyond the Classroom Certificate**, Purdue University, 2016.
  - Required work experience, volunteer time, career training, and one significant activity – bicycling across the U.S. with Bike & Build to raise money and awareness for affordable housing.
- **Presidential Scholarship**, Purdue University, 2012.
- **Ascarelli Fellow**, Purdue University Department of Physics and Astronomy, 2012.
- **Eagle Scout**, 2012.