Taylor E. Jacovich

http://astrophysicist-adjacent.com
tjacovich@gwu.edu | 203.841.8518

EDUCATION

GEORGE WASHINGTON

PhD in Physics
Expected May 2020 | Washington D.C.
Cum. GPA: 3.67

M.Phil in Physics
Expected May 2018 | Washington D.C.
Cum. GPA: 3.67

Graduate Cert. in High Performance Computing
Expected May 2018 | Washington D.C.
Cum. GPA: 3.96

GETTYSBURG COLLEGE

BS in Physics cum laude
May 2015 | Gettysburg, PA
Honors in Physics
Cum. GPA: 3.53
Major GPA: 3.61

LINKS

Github:// tjacovich
LinkedIn:// taylor-jacovich
YouTube:// blackcat762
Twitter:// @tay_jacs

COURSEWORK

GRADUATE

Radiative Processes
Computational Physics I-III
Intro to High Performance Computing
Cloud Computing and Big Data
Advanced Microarchitecture

UNDERGRADUATE

Discrete Wavelet Transforms
Observational Astronomy
Lasers and Optics

SKILLS

DATA ANALYSIS

Computational Modeling
Statistical Inference
Monte Carlo Fitting
Broadband Modeling
Astronomical data reduction
Mathematica and Matlab

PROGRAMMING

C/C++, CUDA, UPC
MPI/OpenMP
python

AWARDS AND FELLOWSHIPS

2015-Present	Graduate Teaching Fellowship
2014	Schweizer Summer Research Grant
2012-2015	Anthony Wasilewksi Endowed Scholarship
2011-2015	Presidential Scholarship
2011- 2015	Alexion Life Sciences Scholarship
2011	Eagle Scout

AREAS OF INTEREST

- Numerical solutions to nonlinear and open-ended physical problems
- Computational Modeling of Astrophysical Phenomena and Radiative Output
- High-Performance and Distributed Computing solutions
- High-Energy and Broadband Astrophysics

RESEARCH

BROADBAND MODELING OF GRB AFTERGLOWS | Graduate Research Assistant

Aug 2016 – Present | Washington D.C.

- Worked with **Prof Alexander van der Horst** to find physical parameters to model the gamma-ray burst GRB070125 using *boxfit*, a tool that generates lightcurves and spectra from numerical radiation calculations performed on a two-dimensional astrophysical jet model.
- Helped determine the need for Synchrotron Self-Compton as an additional emission channel for *boxfit*. Publication forthcoming.

COMPUTATIONAL MODELING OF GRB AFTERGLOWS | Graduate Research Assistant

January 2017 – Present | Washington D.C.

- Worked with **Dr. Alexander van der Horst** and **Dr. Paz Beniamini** to understand the theoretical basis for introducing Synchrotron Self-Compton scattering to *boxfit* in a computationally efficient manner. Publication Forthcoming.
- Performed mathematical derivation of Inverse-Compton parameter beyond what currently appears in the literature.
- Developed smoothed approximation to IC parameter for implementation in *boxfit*.
- Working to extend *boxfit* with GPU acceleration to facilitate a distributed computing and citizen-science project with the working title *The Afterglow Project*

SIMULATING SCALAR FIELD THEORIES ON THE LATTICE | Research Assistant

August 2016 – December 2016 | Washington D.C.

- Worked under **Dr. Andrei Alexandru** to simulate a scalar field with a quartic interaction on a D+1-dimensional lattice using a Metropolis based Monte Carlo algorithm to walk through the configuration space of the particle as a precursor to a more robust study of symmetry breaking with respect to the Path Integral sign problem.
- Performed Lattice regulated perturbation calculations to verify numerical results from the theory.

RESEARCH

ACTIVITY-CYCLE VIABILITY STUDY OF NGC 6811 | Senior Research Assistant

May 2014 – September 2014 | Gettysburg, PA

- Worked under **Dr. Jacqueline Milingo** to perform V Band differential Photometry on cool dwarf stars in NGC 6811. Utilized Lomb-Scargle period finding routines to extract magnitude and rotational period data for these stars as part of an activity-cycle viability study.
- Collected data utilizing The National Undergraduate Research Observatory 0.8m telescope in Flagstaff AZ.
- Presented results as a poster at Gettysburg College Fall Honors day.
- Precursor work for my Senior **Thesis**.

OBSERVING AND ASTROMETRY WITH NURO | Research Assistant

May 2014 – September 2014 | Gettysburg, PA

- Collected data of cool dwarfs in M45 utilizing the National Undergraduate Research Observatory 0.8m telescope in Flagstaff AZ for use in an ongoing activity-cycle study.
- Performed differential photometry on these frames, and on images of two asteroids: Weismann and UETA.
- Fit sinusoids to the asteroid lightcurves to determine rotational periods.

TEACHING EXPERIENCE

TEACHING ASSISTANT | Astronomy 1001 and 1002 Scale-Up

January – May: 2016, 2017, 2018 | Washington, D.C.

- Helped conduct class sessions by preparing activity and workbook materials.
- Led discussions during class and queried students about their understanding during group activities.
- Circulated among the students to answer questions as needed.
- Assisted in proctoring exams, and graded all workbooks, lab reports and midterms.

LABORATORY INSTRUCTOR | Astronomy 1001 and 1002

August – December: 2015, 2016, 2017. January – May: 2016 |Washington, D.C.

- Prepared quizzes and instructed astronomical laboratory sections in conjunction with the lecture component of the course.
- Actively answered questions that arose during the laboratory sessions and attempted to connect material to main course wherever possible.
- Graded lab reports and proctored and graded all examinations.

LABORATORY INSTRUCTOR | Physics 1021 and 1012

May 2017 – September 2017 | Washington, D.C.

- Prepared quizzes and instructed laboratory and recitation sections in conjunction with the lecture component of the course.
- Actively answered questions that arose during the laboratory sessions and attempted to connect material to main course wherever possible.
- Graded labwork, homework, quizzes and exams.
- Held regular office hours to further facilitate student comprehension.

PEER LEARNING ASSOCIATE | Differential Equations

August 2014 – May 2015 | Gettysburg, PA

- Organized and held drop-in hours for students seeking help on Matlab based differential equations projects
- Provided support for preparing project reports in LaTeX.

PEER SCIENCE MENTOR | Astronomy 101 and 102

August 2013 – May 2015 | Gettysburg, PA

- Organized and led homework and exam review sessions for students in both sections of Introductory Solar System and Stellar astronomy classes.

LABORATORY TEACHING ASSISTANT | Astronomy 101 and 102

August 2013 – May 2015 | Gettysburg, PA

- Assisted Laboratory instructor in preparing and leading CLEA experiments in astronomy.
- Actively worked with students to answer questions and review concepts during these labs.
- Setup and operated telescopes and CCD cameras for observing laboratory sessions.

PUBLICATIONS AND PRESENTATIONS

Dec. 2014	Capstone Presentation	*Activity-Cycle Viability of Kepler Input Catalog Stars in NGC 6811*
Oct. 2014	GC Fall Honors Poster Presentation	*Search for Starspots in NGC 6811*
Mar. 2012	Central PA 32nd Astronomers' Meeting	*Photometry of Rotating Asteroids at NURO*

PROFESSIONAL SOCIETIES

2015 Sigma Pi Sigma Physics Honor Society
American Association of Variable Star Observers
American Physical Society
2011 National Eagle Scout Association