

Daniel J. Perrefort

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Professional Experience

Research Assistant Professor

University of Pittsburgh | Pittsburgh, PA
June 2021 - Present

- Accelerate user engagement by designing, implementing, and deploying back-end software solutions to support 3 new customer services, earning recognition for resourcefulness and productivity
- Blueprint and teach three-hour workshops on software engineering principles, including git/Github, software design, CI/CD, and software testing
- Train and mentor 4 junior team members on software development fundamentals, including OO design, version control systems, and common software quality standards
- Revitalize team roadblocks into opportunities by leading 5 dedicated projects to catalog and pay off long-standing technical debt
- Spearhead the team-wide adoption of modern software development workflows and tools while working to improve overall software quality, achieving institutional versatility in the industry
- Consult in conjunction with 12 faculty and engineers to build a service platform delivering a seamless experience with a high level of performance

Graduate Research Assistant

University of Pittsburgh | Pittsburgh, PA
August 2015 - May 2021

- Directed the development of object-oriented software tools designed to streamline workflows and simplify data processing, reducing project onboarding time by over 40
- Maximized on data-driven communication to collaborate effectively with teams having diverse levels of expertise and experience
- Collaborated in diverse software ecosystems to build web, API, and command-line software tools
- Optimized scientific software projects at both the development operations and source code levels by offering personalized project consultations and code reviews
- Coordinated with solutions architects from a world-leading software company to configure scalable, cloud-based systems for processing scientific data streams
- Lead 3 research projects to analyze data and design procedures to support the world's largest optical telescope

Education

2015 - 2021 University of Pittsburgh
Ph.D. Physics (2021)
M.S. Physics (2017)

2012 - 2015 University of Connecticut
B.S. Applied Physics

Service

2022 - Present	Mentorship Committee Committee Member, Dark Energy Science Collaboration
2022 - Present	Membership Committee Committee Member, Dark Energy Science Collaboration
2018 - 2020	Dietrich Graduate School of Arts & Sciences Graduate Council Committee Member, University of Pittsburgh
2017 - 2020	Graduate Student Organization Physics Department Representative, University of Pittsburgh
Spring 2019	Arts and Sciences Graduate Travel Grant Committee Committee Chair, University of Pittsburgh
2017 - 2019	Association of Physics and Astronomy Students Co-President, University of Pittsburgh
2014 - 2015	Student Leadership Board, College of Liberal Arts and Sciences Recruitment Chair & Communications Task Force member, University of Connecticut

Outreach

Spring 2022	UConn CLAS Alumni Mentorship Program Mentor, Virtual
March 2019	Astronomy on Tap - Science Communication Event Presenter, Franktuary Bar and Resturaunt
March 2019	Physics Department Prospective Students Weekend Event Coordinator, University of Pittsburgh
February 2019	Physics Department Three Minute Thesis Competition Co-Organizer, University of Pittsburgh
February 2019	“Meet a Scientist”: Phipps Science Communication Workshop Table Presenter, Phipps Conservatory
September 2018	“Pursuing Success in Non-Academic Career Paths” Networking Series Co-Organizer, University of Pittsburgh
March 2018	Physics Department Prospective Students Weekend Event Coordinator, University of Pittsburgh
March 2018	Physics Department Three Minute Thesis Competition Coordinator and Co-Organizer, University of Pittsburgh
February 2017	Transitioning Into Physics Research Mentorship Event Co-Coordinator, University of Pittsburgh
September 2017	Mentorship Event for Physics Graduate Teaching Assistants Co-Coordinator, University of Pittsburgh

Talks and Presentations

Sept 29, 2022	Version Control with Git and Data Management Perspectives, <i>Virtual</i> (Talk)
March 16, 2022	Best Practices for Writing Intermediate Level Python, <i>Virtual</i> (Talk)
Sept 29, 2021	Introduction to Version Control, <i>Virtual</i> (Talk)
Aug 11, 2020	Rubin Observatory Project and Community Workshop, <i>Virtual</i> (Talk)
Jun 3, 2020	2020 Pitt Summer Bootcamp, <i>Virtual</i> (Talk)
Jan 24, 2020	Astro-Lunch Seminar Series, <i>University of Pittsburgh</i> (Talk)
Jan 21, 2020	LSST/DESC Collaboration Meeting, <i>University of Arizona</i> (Talk)
Sep 26, 2019	Midwest Workshop on Supernovae and Transients, <i>Ohio State University</i> (Talk)
Feb 4, 2018	Astro-Lunch Seminar Series, <i>University of Connecticut</i> (Talk)
Oct 4, 2018	LSST/DESC Photometric Calibration Workshop, <i>LPNHE, Paris France</i> (Talk)
Sep 18, 2018	Astro-Hacks Programming Series, <i>CMU</i> (Talk)
Jul 24, 2018	Dark Energy Science Collaboration Meeting, <i>CMU</i> (Poster)
Feb 3, 2017	Astro-Snacks Seminar Series, <i>University of Pittsburgh</i> (Talk)

Fellowships and Funding Awards

Summer 2021	Z. Daniels Fellow University of Pittsburgh, Pittsburgh, PA
Spring 2020	Pittsburgh Particle, Astrophysics, and Cosmology Center Graduate Appointment University of Pittsburgh, Pittsburgh, PA
Fall 2018	Arts & Sciences Fellow in Physics and Astronomy University of Pittsburgh, Pittsburgh, PA
2015 - 2016	K. Leroy Irvis Fellow University of Pittsburgh, Pittsburgh, PA

Travel Grants

September 2019	TOM Toolkit Workshop Travel Grant TOM Toolkit Workshop at CSP Observatories in Pasadena, Ca
July 2019	LSST Corporation Travel Grant LSST Project and Community Workshop, Tuscon, Az
July 2019	LSST Dark Energy Science Collaboration (DESC) Travel Grant LSST DESC Collaboration Meeting at the Astroparticle and Cosmology Laboratory, Paris, Fr
February 2019	LSST Dark Energy Science Collaboration (DESC) Travel Grant LSST DESC Collaboration Meeting at UC Berkely, Berkely, CA

- February 2019** **LSST Dark Energy Science Collaboration (DESC) Travel Grant**
LSST Broker Workshop at UC Berkely, Berkely, CA
- February 2019** **Graduate Student Organization (GSO) Travel Grant**
Individual talk at University of Connecticut, Storrs, CT
- October 2018** **LSST-DESC Photometric Calibration Travel Grant**
LPNHE, Paris, France
- June 2018** **Data Visualization and Exploration in the LSST Era Travel Grant**
University of Illinois, Urbana - Champaign, IL
- February 2018** **LSST Dark Energy Science Collaboration (DESC) Travel Grant**
LSST DESC Collaboration Meeting at SLAC National Accelerator Laboratory, Menlo Park, CA

Teaching

- Fall 2016** Introduction to Physics I (PHYS 0110)
Teaching Assistant, University of Pittsburgh
- Summer 2016** Basic Physics for Science and Engineering II (PHYS 0175)
Teaching Assistant, University of Pittsburgh

Publications

5. GPS Measurements of Precipitable Water Vapor Can Improve Survey Calibration: A Demonstration from KPNO and the Mayall z-band Legacy Survey
Michael Wood-Vasey, **Daniel Perrefort**, Ashely Baker
[The Astrophysical Journal](#)
4. *The Dependence of the Type Ia Supernova Host Bias on Observation or Fitting Technique*
Jared Hand; Shu Liu; Lluís Galbany, **Daniel Perrefort**, et al.
[The Astrophysical Journal](#)
3. *The LSST DESC DC2 Simulated Sky Survey*
LSST Dark Energy Science Collaboration et al. (alphabetical)
[The Astrophysical Journal](#)
2. A Template Based Approach to the Photometric Classification of SN 1991bg-like Supernovae in the SDSS-II Supernova Survey
Daniel Perrefort, Yike Zhang, Lluís Galbany, Michael Wood-Vasey, Santiago González-Gaitán
[The Astrophysical Journal](#)
1. *pwv_kpno: A Python Package for Modeling the Atmospheric Transmission Function due to H₂O*
Daniel Perrefort, Michael Wood-Vasey, K. Azalee Bostroem et al.
[Publications of the Astronomical Society of the Pacific](#)

Notes and White Papers

4. *Snowmass2021 Cosmic Frontier White Paper: Enabling Flagship Dark Energy Experiments to Reach their Full Potential*
Snowmass 2021 paper - Principle Author: Jeffery Newman
[Proceedings of the US Community Study on the Future of Particle Physics](#)
3. *DESC DC2 Data Release Note*
LSST Dark Energy Science Collaboration et al. (alphabetical)
[arXiv](#)
2. *Single-object Imaging and Spectroscopy to Enhance Dark Energy Science from LSST*
Astro2020 Decadal paper - Principle Author: R. A. Hložek
[Bulletin of the AAS](#)
1. *Wide-field Multi-object Spectroscopy to Enhance Dark Energy Science from LSST*
Astro2020 Decadal paper - Principle Author: Rachel Mandelbaum
[Bulletin of the AAS](#)