

Dr. Jennifer J. Greco

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Current Position

Thunberg Postdoctoral Research Fellow
Uppsala University and the Swedish Collegium for Advanced Studies
Advisor: Dr. Nikolai Piskunov

October 2020 - Present

Education

University of Toledo, Toledo OH
PhD., Physics with Astrophysics Concentration
Dissertation: *Two Near-Infrared Spectroscopic Studies of Ultracool Dwarfs: A Proper Motion Survey Follow-Up and A High-Resolution Investigation*
Advisor: Dr. Michael C. Cushing

August 2013 - August 2020

California Institute of Technology, Pasadena CA
B.S., Astrophysics

September 2008 - June 2012

Research Interests

- Low mass stars and brown dwarfs
- Exoplanets
- Substellar and planetary atmospheres
- Physics and astronomy education

Publications

Spectroscopic Follow-Up of Discoveries from the NEOWISE Proper Motion Survey
Greco, J.J., Cushing, M.C., Schneider A.C., Burgasser A.J. 2019. *AJ*, 158, 5.

WISEA J041451.67?585456.7 and WISEA J181006.18?101000.5: The First Extreme T-type Subdwarfs?
Schneider, A.C., Burgasser, A.J., et al. (**Including Greco, J.J.**) 2020. *ApJ*, 898, 77.

An Updated Ephemeris for the Single-lined Orbit of the Supergiant μ Sagittarii
Johnson, R.A., Richardson, N.D., et al. (**Including Greco, J.J.**) 2018. *Research Notes of the AAS*.

The Most Massive Heartbeat: An In-depth Analysis of ι Orionis
Pablo, H., Richardson, N. D., et al. (**Including Greco, J.J.**) 2017. *MNRAS*, 467, 2494.

A Spectroscopic Orbit for the Late-type Be Star β CMi
Dulaney, N. A., Richardson, N. D., et al. (**Including Greco, J.J.**) 2017. *ApJ*, 836, 112.

The ALLWISE Motion Survey, Part 2
Kirkpatrick, J. D., Kellogg, K., Schneider, A.C., Fajardo-Acosta, S., Cushing, M.C., **Greco, J.**, et al., 2016, *ApJS*, 224, 36

A Proper Motion Survey Using the First Pass of the NEOWISE-Reactivation Data
Schneider, A.C., **Greco, J.**, Cushing, M.C., Kirkpatrick, J.D., Mainzer, A., Gelino, C.R., Fajardo-Acosta, S., & Bauer, J., 2016, *ApJ*, 817, 112

Observing Experience

Ritter 1.0-meter telescope: CCD camera, echelle and LDS spectrographs, spectropolarimeter
NASA IRTF: MIRS1 and NSFCAM2 infrared imagers, SpeX near-infrared spectrograph
LDT: IGRINS high resolution near-infrared spectrograph

Skills

Programming Languages and Software: Python, IDL, MATLAB, Mathematica, IRAF, L^AT_EX
Operating Systems: Mac, Windows, Linux
Electronics: Circuit layout, design, construction, and soldering
Foreign Languages: Fluent Japanese, Conversant Spanish

Grants and Awards

Named Thunberg Postdoctoral Research Fellow September 2020
Named as one of the first fellows for the Thunberg Postdoctoral Research Fellowship at the Swedish Collegium
for Advanced Study and Uppsala University

University of Toledo College of Natural Sciences and Mathematics Travel Grant, **\$500** December 2019
Awarded funds to travel to the 235th Meeting of the AAS in Honolulu, HI

AAS FAMOUS Travel Grant, **\$500** December 2019
Awarded funds to travel to the 235th Meeting of the AAS in Honolulu, HI

University of Toledo Nancy Morrison Student Travel and Publication Fund, **\$500** May 2019
Awarded funds to travel to the 235th Meeting of the AAS in Honolulu, HI

Natural Sciences and Mathematics Award for Outstanding Oral Presentation, **\$100** May 2019
2019 Midwest Graduate Research Symposium

Award for Best Graduate Student Presentation, **\$250** December 2017, May 2019
University of Toledo Astronomy Journal Seminar

Robert and Noreen Stolberg Award for Graduate Teaching Achievement, **\$1,600** April 2017
University of Toledo Department of Physics and Astronomy award for achievement in teaching.

University of Toledo Advanced Leadership Academy February 2017
One of 10 students from the College of Natural Sciences and Mathematics selected to participate

Proposal to Host APS CUWiP Conference **\$15,300** December 2016
Co-wrote a proposal for the University of Toledo to be a host site for the 2018 APS Conferences for Under-
graduate Women in Physics (CUWiP). In addition to the money provided by APS, we raised an additional
\$15,000 using our own independent fundraising.

Physics and Astronomy Outstanding Service Award, **\$1,000** April 2016
University of Toledo Department of Physics and Astronomy award for outstanding services to the department.

AAS International Travel Grant, **\$1578.16** February 2016
Awarded funds by the AAS to travel to the Cambridge Workshop on Cool Stars, Stellar Systems, and the
Sun ("Cool Stars"), June 2016 in Uppsala, Sweden

Previous Research

Graduate Research Assistant May 2014 - August 2020
Department of Physics and Astronomy, University of Toledo, Toledo OH
Advisor: Dr. Michael C. Cushing

- Used data from WISE mission to help conduct an all-sky proper motion search for nearby brown dwarfs. Then conducted follow-up observations to characterize discoveries.
- Used high-resolution spectroscopy of ultracool dwarfs (M1.5 - T5) to study atmospheric compositions

Post Graduate Research Assistant December 2012 - July 2013
CSIR Center for High Performance Computing, Cape Town, South Africa

Advisor: Dr. Catherine Cress

- Wrote a data reduction manual for longslit reduction of SALT spectra using IRAF
- Found distances to the galaxies using the Tully-Fisher relation and compared them to values from Type Ia Supernovae

Undergraduate Research Assistant June 2010 - August 2010 and June 2011 - August 2011
NASA Jet Propulsion Laboratory, Pasadena CA

Advisor: Dr. Glenn Orton

- Used 15 years of IRTF observations to construct long term atmospheric profiles of Jupiter
- Used atmospheric profiles to determine the causes of observed changes in the major equatorial bands

Undergraduate Research Assistant June 2009 - August 2009
Department of Astronomy, California Institute of Technology, Pasadena CA

Advisor: Dr. Jessica Lu

- Used UKIDSS data to create an improved IR catalog of the G48.9-0.3 component of the star cluster W51 and derived basic properties of that component of the cluster

Teaching & Mentoring Experience

University of Toledo Astronomy Graduate Student Peer Mentoring Program August 2019 - May 2020

- Created a peer mentoring program to help support new graduate students. Each incoming student was paired with a more senior graduate student to help mentor them during their first year.

Ritter Observing Team - Telescope Operator Training January 2013 - August 2017

- Responsible for observing on Ritter 1-meter telescope and its four instruments
- Trained 11 undergraduates and two graduate students in use of telescope.

Graduate Teaching Assistant August 2013 - May 2020
Department of Physics and Astronomy, University of Toledo, Toledo OH

- Taught introductory undergraduate physics labs for over 500 students
- Tutored for all undergraduate physics courses
- Graded and proctored for introductory physics and astronomy courses
- Taught physics recitations for introductory physics courses for over 400 students

Head TA Fall 2014, Fall 2015, Spring 2016
Department of Physics and Astronomy, University of Toledo, Toledo OH

- Head TA for undergraduate physics labs at University of Toledo
- Responsible training new graduate TAs and running weekly lab setup

Undergraduate Teaching Assistant March 2011 - June 2011 and March 2012 - June 2012
Department of Astronomy, California Institute of Technology, Pasadena CA

- Teaching assistant for undergraduate astronomy course. Responsible for office hours, grading, and review sessions.
- Taught weekly recitation sections on special topics (2011: extrasolar planets and planetary habitability, 2012: order of magnitude physics)

Mentor: Undergraduate Student Research
Michael Rouppas Fall 2015 - Spring 2016

Successful Observing Proposals (As PI)

2019 A - Discovery Channel Telescope/IGRINS Spectrograph (3 nights)
A High-Resolution H and K Band Spectroscopic Sequence of Ultracool Dwarfs

2018 A - Discovery Channel Telescope/IGRINS Spectrograph (1 night)
A High-Resolution H and K Band Spectroscopic Sequence of Ultracool Dwarfs

2017 Q4 - Discovery Channel Telescope/IGRINS Spectrograph (1 night)
A High-Resolution H and K Band Spectroscopic Sequence of Ultracool Dwarfs

2017 Q1 - Discovery Channel Telescope/IGRINS Spectrograph (1 night)
High-Resolution Spectroscopy of the L Dwarf Sequence with IGRINS

2016 Q4 - Discovery Channel Telescope/IGRINS Spectrograph (1.5 nights)
High-Resolution Spectra of the L Dwarf Sequence with IGRINS

2016B - NASA Infrared Telescope Facility/Spex (3 nights)
Characterizing Discoveries from the NEOWISE Proper Motion Survey.

Conference Presentations

A High-Resolution H- and K-Band Spectroscopic Sequence of Ultracool Dwarfs (poster)
STScI 2021 Spring Symposium (virtual) April 2021

A High-Resolution H- and K-Band Spectroscopic Sequence of Ultracool Dwarfs (poster)
Cambridge Workshop on Cool Stars, Stellar Systems and the Sun, 20.5 (virtual), March 2021

A High-Resolution H- and K-Band Spectroscopic Sequence of Ultracool Dwarfs (invited talk)
Fall 2020 Astronomy Seminar Series at Uppsala University (virtual), October 2020

Brown Dwarfs: Bridging the Gaps Between Stars and Planets (invited talk)
Launch of the Thunberg Fellowship Program, Swedish Collegium for Advanced Study, Uppsala, Sweden
October 2020

A High-Resolution H- and K-Band Spectroscopic Sequence of Ultracool Dwarfs (invited talk)
Fall 2020 Science Speaker Series at Embry-Riddle Aeronautical University (virtual), September 2020

A High-Resolution H- and K-Band Spectroscopic Sequence of Ultracool Dwarfs (thesis talk)
235th Meeting of the American Astronomical Society, Honolulu, HI, January 2020

A High-Resolution H- and K-Band Spectroscopic Sequence of Ultracool Dwarfs (contributed talk)
Midwest Graduate Research Symposium, University of Toledo, April 2019

A High-Resolution H- and K-Band Spectroscopic Sequence of Ultracool Dwarfs (poster)
Cambridge Workshop on Cool Stars, Stellar Systems, and the Sun, 20, Cambridge, MA, August 2018

Discoveries from the NEOWISE-Reactivation Proper Motion Survey (poster)
Cambridge Workshop on Cool Stars, Stellar Systems, and the Sun, 19, Uppsala, Sweden, June 2016

Meet the Neighbors: Identifying New Cold Stars in the Solar Neighborhood (contributed talk)
Midwest Graduate Research Symposium, University of Toledo, March 2016

First Discoveries from the NEOWISE-Reactivation Proper Motion Survey (poster)
Emerging Researchers in Exoplanet Science Symposium, Penn State University, May 2015

The Search for Missing Solar Neighbors (contributed talk)
Midwest Graduate Research Symposium, University of Toledo, March 2015

Temperature Variations of Jupiter's Atmosphere from Mid-Infrared Imaging (contributed talk)
Southern California Conferences for Undergraduate Research, Mount San Antonio College, September 2011.

Service & Outreach

Representative to Uppsala University Equal Opportunities Board January 2021 - present

- Representative for the astronomy department to the equal opportunities board.

Volunteer Panelist for Dragon Con Science Track September 2018, September 2020

- Dragon Con is a science fiction/fantasy convention. I served as a panelist for their science track, educating the public on careers in science, and the accuracy of science in fantasy/science fiction.

Graduate Student Jobs Coordinator September 2018 - September 2019

- Responsible for assigning and overseeing all the graduate student jobs in the department including colloquium setup, outreach, and other department committees.

Conference for Undergraduate Women in Physics (CUWiP) Organizing Committee May 2016 - June 2018

- Member of a committee of graduate students and faculty that organized and hosted a CUWiP conference at the University of Toledo.
- Helped write proposal for UT to host the conference
- Invested over 280 volunteer hours in organizing and running the event, including coordinating all volunteers and guest speakers

TAC Member - University of Toledo DCT Telescope Allocation Committee October 2016 - October 2017

- Member of Telescope Allocation Committee for Discovery Channel Telescope.
- Responsible for reviewing proposals and allocating time for UT astronomers using the DCT.

Physics Outreach with Through University of Toledo Physics Department September 2016 - August 2020

- As co-chair of the outreach committee, I am responsible for building and maintaining demos, and organizing our presence at local outreach events, including the events listed below.
- Ritter Planetarium events: Earth and Space Science Day May 2019, Astronomy Day April 2017
- Outreach activities for visiting school groups: July 2019, May 2019, Feb 2017, Oct 2016
- Ottawa Hills Science Expo: Infrared camera demonstrations, February 2018
- Teach-In Tables at March for Science: Toledo, April 22, 2017
- Spectacular Physics: physics demonstrations at Toledo Public Library, September 2017
- Physics Demonstrations at UT CUWiP Conference, January 2018
- Chase After School Program: Solar Cell Building April 2017; Egg Drop November 2017

Webmaster: University of Toledo Society for Physics Students (SPS) April 2017 - April 2019

- Responsible for remaking website for our local SPS chapter

Cedar Point Physics, Science and Math Week May 2015, May 2016, May 2017, May 2018, May 2019

- Put on physics demonstrations for public and school groups at Cedar Point.
- Since 2016, I have been in charge of helping organize the UT's presence at the event.

Women In STEMM, Day of Meetings (WISDOM) May 2016, May 2017, May 2018, May 2019

- The University of Toledo Association for Women in Science (AWIS) puts on an annual outreach event for female high school students.
- I helped to run physics demonstrations and chaperone students at the event.

Judge for Northwest District Science Day March 2015, March 2017

- Judged middle school and high school science projects for the Outstanding Physics Award.

Judge for Jesup Scott Honors College Scholarship Day

January 2015

- Judged incoming undergraduates for the Physics Honors College in a scholarship contest.

Outreach Talks

Looking for Life in the Solar System

5th Grade Classes at Liberty Elementary in Seattle, WA (virtual) January 2021

What Does an Astrophysicist Do?

5th Grade Class at Liberty Elementary in Seattle, WA (virtual) February 2020

Searching for Other Planets

Innovative Language Academy in Gori, Georgia (virtual), July 2019

Brown Dwarfs: Bridging the Gap Between Stars and Planets

General Motors Astronomy Club, April 2019

Answers to Student Astronomy Questions

3rd Grade Class at Allen Creek Elementary in Seattle, WA, March 2018

Brown Dwarfs: Bridging the Gap Between Stars and Planets

University of Toledo Astronomy Day, April 2017

A WISE Survey of our Nearest Neighbors

Toledo Astronomical Association, December 2016

Hunting for Missing Solar Neighbors

University of Toledo White House Astronomy Night, October 2015

University of Toledo Research Experience for Undergraduates (REU) Summer Seminar Series

Invited to give talks describing my research to the REU students at the University of Toledo

July 2015, July 2016, July 2017, University of Toledo

Professional Organization Membership

American Astronomical Society

Oct 2019 - Present

Sigma Pi Sigma

April 2015 - Present

Society of Physics Students

April 2015 - Present