Trevor Z. Dorn-Wallenstein

Curriculum Vitae

Observatories of the Carnegie Institution for Science
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Employment

Carnegie Fellow — September 2022 - Present
Observatories of the Carnegie Institution for Science, Pasadena, CA

Postdoctoral Experience

Postdoctoral Scholar — September 2021 - September 2022
University of Washington, Seattle, WA

Education

Ph.D. in Astronomy — August, 2021
Thesis: "Small Samples No More: Probing the Evolution of Massive Stars
University of Washington, Seattle, WA

M.S. in Astronomy — 2016
University of Washington, Seattle, WA

B.S. in Physics — 2015
B.S. in Astronomy
Thesis: Characterizing the X-Ray Source Population of the Whirlpool Galaxy
Wesleyan University, Middletown, CT

Honors & Awards

Astronomy Department Graduate Research Prize (UW) — 2020
Schmidt Science Fellowship Nominee (UW) — 2020
Selected Attendee: Pulsations Along Stellar Evolution VIII (La Plata, Argentina) — 2019
International Travel Grant Recipient (International Astronomical Union) — 2016
High Honors (Wesleyan University) — 2015
Littell Prize (Wesleyan University Astronomy Dept.) — 2015
Presenter, Committee on Undergraduate Research REU Symposium — 2014

Research Experience

Postdoctoral Scholar (Carnegie) — 2022 – Present
Supervisors: Dr. Tony Piro

Postdoctoral Scholar (U. Washington) — 2021 – 2022
Supervisors: Prof. Emily M. Levesque, Prof. J. Davenport

Graduate Research Assistant (U. Washington) — 2015 – Present
Supervisors: Prof. Emily M. Levesque (Ph.D. Thesis Advisor),
Prof. J. Davenport, Prof. J. Dalcanton
(Published: Dorn-Wallenstein et al. 2017, 2018, 2019, 2020a, 2020b, 2021)

Undergraduate Researcher (Wesleyan University) — 2013 – 2015
Supervisor: Prof. Roy Kilgard (B.A. Honors Thesis Advisor)
Published: Dorn-Wallenstein (2015)

REU Student Researcher (Colgate University) — 2014
Supervisor: Prof. Jeff Bary (Keck Northeast Astronomy Consortium)

24" Telescope Operator (Van Vleck Observatory) 2014 – 2015
Supervisor: Prof. Seth Redfield (Wesleyan University)

Speaking Experience

Invited Panelist, Observations, Transport in Stellar Interiors (KITP), **video**	2021
Invited Talk, TESS Science Conference II, **video**	2021
Invited Talk, Thorne-Żytkow Object Meeting-in-a-Meeting, AAS 238	2021
Invited Talk, AAVSO Webinar	2021
Invited Talk, ARC Star Talk, University of Victoria **video**	2021
Astronomy at Home **video**	2021
Invited Talk, "Lunch Talk" Seminar, Carnegie Observatories	2021
Contributed Talk, DELVE Virtual Conference	2021
Contributed Talk, MOBSTER-1 Virtual Conference **video**	2020
Breakout wavelet tutorial, online.tess.science Virtual Sprint **video**	2020
Contributed Talk, STScI Spring Symposium	2019
Astronomy on Tap Seattle **video**	2019
Contributed Talk, Northwest x Southwest Meeting (University of British Columbia)	2018
Astronomy on Tap Seattle **video**	2017
Contributed Splinter Talk, IAU Symposium 329 (Auckland, NZ)	2016

Successful Observing Proposals

TESS, Cycles 2-4 (targets awarded) 2019-2021
P-I: **T. Dorn-Wallenstein**

APO 3.5-m (>30 half nights) 2015 – Present
Optical imaging, long-slit spectroscopy, echelle spectroscopy on various projects.
P-I: **T. Dorn-Wallenstein**

Gemini, GMOS-S 2017A
"Multi-Wavelength Monitoring of the Young HMXB SN 2010da,"
P-I: E. Levesque

Gemini Fast Turnaround, GMOS-N 2016A
"A Candidate Red Supergiant High-Mass X-ray Binary in M31,"
P-I: E. Levesque

ESO, VLT/XSHOOTER 2016A
"SMC 8324: A New Thorne-Zytkow Object Candidate in the Small Magellanic Cloud,"
P-I: E. Levesque

Technical Skills

Developer on open-source software packages: JazzHands, arcesetc, aesop, ingot
Data reduction, analysis, and visualization with Python, SQL/ADQL, IDL, IRAF, ciao/Xspec
Proposing, planning, and carrying out optical spectroscopic and photometric observations
Survey & time-domain data retrieval and analysis

Service & Outreach

Graduate Student Representative to Faculty (UW)	2018-2020
Astronomy on Tap SEA Organizer	2016 - 2020
Journal Referee (MNRAS)	2019, 2020
Pre-MAP Graduate Research Mentor	2018, 2020
APO–UW Time Allocation Committee	2017 – 2019
Open House Speaker (Theodor Jacobson Observatory, UW)	2019
Prospective Graduate Student Visit Coordinator (UW)	2017, 2018
Planetarium Presenter (UW)	2016, 2017

Teaching Experience

Teaching Assistant (UW) 2015-2017
· Designed and led lab/quiz sections for introductory college astronomy courses.

1st Author Publications

8. The Properties of Fast Yellow Pulsating Supergiants: FYPS Point the Way to Missing Red Supergiants
T.Z. Dorn-Wallenstein, E.M. Levesque, J.R.A. Davenport, K.F. Neugent, B.M. Morris, & K.A. Bostroem. ApJ, In Press (2022)
7. Photometric Classifications of Evolved Massive Stars: Preparing for the Era of *Webb* and *Roman* with Machine Learning
T.Z. Dorn-Wallenstein, J.R.A. Davenport, D. Huppenkothen, & E.M. Levesque. ApJ, 913(1):32 (2021)
6. Short Term Variability of Evolved Massive Stars with TESS II: A New Class of Cool, Pulsating Supergiants
T.Z. Dorn-Wallenstein, E.M. Levesque, K.F. Neugent, J.R.A. Davenport, B.M. Morris, & K. Gootkin†. ApJ, 902(1):24 (2020) Press: Physics World, Astrobites
5. A Comparison of Rotating and Binary Stellar Evolution Models: Effects on Massive Star Populations
T.Z. Dorn-Wallenstein & E.M. Levesque. ApJ, 896(2):164 (2020)
4. Short Term Variability of Evolved Massive Stars with TESS
T.Z. Dorn-Wallenstein, E.M. Levesque, & J.R.A. Davenport. ApJ, 878(1):155 (2019)
3. Stellar Population Diagnostics of the Massive Star Binary Fraction
T.Z. Dorn-Wallenstein & E.M. Levesque. ApJ, 867(2):125 (2018)
2. A Mote in Andromeda's Disk: A Misidentified Periodic AGN behind M31
T.Z. Dorn-Wallenstein, E.M. Levesque, & J.J. Ruan. ApJ, 850(1):86 (2017)
1. Characterizing the X-Ray Source Population of the Whirlpool Galaxy
T.Z. Dorn-Wallenstein. Wesleyan University Press (2015)

Co–Author Publications

7. Photometric detection of internal gravity waves in upper main-sequence stars. III. Comparison of Gaussian processes and amplitude spectrum fitting
D.M. Bowman & **T.Z. Dorn-Wallenstein**. A&A, Accepted (2022).
Developed and tested GP fitting methodology, computed simulated light curves in hare & hound tests, contributed to manuscript.
6. Testing Evolutionary Models with Red Supergiant and Wolf-Rayet Populations
P. Massey, K.F. Neugent, **T.Z. Dorn-Wallenstein**, *et al.* ApJ, 922(2):177 (2021).
Computed model grids, ran variable star-formation history simulations, contributed to manuscript.
5. 13 years of P Cygni Spectropolarimetry: Investigating Mass Loss through Hα, Periodicity, and Ellipticity
K. Gootkin†, **T.Z. Dorn-Wallenstein**, *et al.* ApJ, 900(2):162 (2020)
Mentored first author, oversaw the analysis work and development of the manuscript.
4. Photometric Metallicities for Low-Mass Stars with Gaia and WISE
J.R.A. Davenport & **T.Z. Dorn-Wallenstein**. RNAAS, 3, 3, (2019)
Ran queries and cross-matches to assemble the sample, aided in manuscript preparation.
3. arcesetc: ARC Echelle Spectrograph Exposure Time Calculator
B.M. Morris, **T.Z. Dorn-Wallenstein**, *et al.* JOSS, 4, 34 (2019)
Aided in software development and the creation of documentation.
2. aesop: ARC Echelle Spectroscopic Observation Pipeline
B.M. Morris & **T.Z. Dorn-Wallenstein**. JOSS, 3, 28 (2018)
Aided in software development and the creation of documentation.
1. No Strong Geometric Beaming in the Ultraluminous Neutron Star Binary NGC 300 ULX-1 (SN 2010da) from Swift and Gemini
B. Binder, E.M. Levesque, & **T.Z. Dorn-Wallenstein**. ApJ, 863(2):141 (2018)
Reduced optical spectroscopic observations, contributed to manuscript preparation.

Recent Conference Proceedings

Talk: New Phenomena in Evolved Supergiants Revealed by TESS
T.Z. Dorn-Wallenstein, E.M. Levesque, K.F. Neugent, J.R.A. Davenport, B.M. Morris, & K. Gootkin†.
TESS Science Conference II Virtual Conference, 2021

Talk: Photometric Identification of Red Supergiants Beyond the Local Group Using Machine Learning
T.Z. Dorn-Wallenstein, J.R.A. Davenport, D. Huppenkothen, & E.M. Levesque.
AAS 238, 2021 (Virtual)

Talk: New Phenomena in Evolved Supergiants Revealed by TESS
T.Z. Dorn-Wallenstein, E.M. Levesque, K.F. Neugent, J.R.A. Davenport, B.M. Morris, & K. Gootkin†.
DELVE: Death-throes of EvoLved stars, a Virtual Encounter, 2021

Lightning Talk: A New Class of Pulsating Yellow Supergiants
T.Z. Dorn-Wallenstein, E.M. Levesque, K.F. Neugent, J.R.A. Davenport, B.M. Morris, & K. Gootkin†.
MOBSTER-1 Virtual Conference, 2020

Poster: Measuring the Massive Star Binary Fraction with Stellar Population Diagnostics
T.Z. Dorn-Wallenstein, & E.M. Levesque.
AAS 233, 2019 (Seattle, WA)

Poster: 13 Years of Spectropolarimetry of P Cygni
K. Gootkin†, J. Lomax, **T.Z. Dorn-Wallenstein**, & E.M. Levesque.
AAS 233, 2019 (Seattle, WA)

Talk: Measuring the Massive Star Binary Fraction with Stellar Population Diagnostics
T.Z. Dorn-Wallenstein & E.M. Levesque.
Northwest x Southwest Meeting, 2018, (University of British Columbia)

Poster: 13 Years of Spectropolarimetry of P Cygni
K. Gootkin†, J. Lomax, **T.Z. Dorn-Wallenstein**, & E.M. Levesque.
Northwest x Southwest Meeting, 2018, (University of British Columbia)

Poster: A Mote in Andromeda's Disk: A Periodic AGN Behind M31
T.Z. Dorn-Wallenstein, E.M. Levesque, & J.J. Ruan.
AAS 231, 2018 (National Harbor, MD)

Talk: There Are (super)Giants in the Sky: Searching for Misidentified Massive Stars in Algorithmically-Selected Quasar Catalogs
T.Z. Dorn-Wallenstein & E.M. Levesque.
IAUS 329: The Lives and Death Throes of Massive Stars, 2016 (Auckland, New Zealand)

Poster: Properties of the Discrete X-ray Source Population of M51
T.Z. Dorn-Wallenstein, *et al.*.
AAS 225, 2015 (Seattle, WA)

†: Supervised student