# Trevor Z. Dorn-Wallenstein

## Curriculum Vitae

University of Washington
Department of Astronomy
tzdw@uw.edu, tzdwi.github.io

3910 15th Ave NE C319
Seattle, Washington 98195-0002
+1 (310) 963-1923

Postdoctoral Scholar
Department of Astronomy
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

**Professional Experience**

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|---|---|
| Postdoctoral Scholar (University of Washington) | Fall 2021 - Present |
| Research and Teaching Assistant (University of Washington) | Fall 2015 - Fall 2021 |
| REU Student Researcher (Colgate University) | Summer 2014 |
| Undergraduate Researcher (Wesleyan University) | Spring 2013 - Spring 2015 |
| 24" Telescope Operator (Van Vleck Observatory) | Spring 2013 - Spring 2015 |

**Teaching Experience**

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

**Honors & Awards**

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|---|---|
| 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 (U. Washington) — 2021 – Present
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)

**Technical Skills**

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
Developer on open-source software packages: JAZZHANDS, ARCESETC, AESOP, INGOT

**Speaking Experience**

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| 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, Cycle 4 (targets awarded) 2021
"Diving into Yellow Supergiants with TESS: Coherent and Stochastic Variability"
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**

TESS, Cycle 3 (targets awarded) 2020
"Pulsations, Rotation, and Outbursts: a TESS Census of Evolved Supergiants"
P-I: **T. Dorn-Wallenstein**

TESS, Cycle 2 (targets awarded) 2019
"A Census of Variability in Evolved Massive Stars"
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

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| **Service & Outreach** | Astronomy on Tap SEA Organizer | 2016 - 2020 |
| | Graduate Student Representative to Faculty (UW) | 2018-2020 |
| | 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 |

**1st Author Publications**

6. 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. ApJ, 913(1):32 (2021)
5. 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
4. 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)
3. 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)
2. Stellar Population Diagnostics of the Massive Star Binary Fraction
**T.Z. Dorn-Wallenstein** & E.M. Levesque. ApJ, 867(2):125 (2018)
1. 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)

**Co–Author Publications**

6. Testing Evolutionary Models with Red Supergiant and Wolf-Rayet Populations
P. Massey, K.F. Neugent, **T.Z. Dorn-Wallenstein**, *et al.* ApJ, in press (2021)
5. 13 years of P Cygni Spectropolarimetry: Investigating Mass Loss through H$\alpha$, Periodicity, and Ellipticity
K. Gootkin†, **T.Z. Dorn-Wallenstein**, *et al.* ApJ, 900(2):162 (2020)
4. Photometric Metallicities for Low-Mass Stars with Gaia and WISE
J.R.A. Davenport & **T.Z. Dorn-Wallenstein**. RNAAS, 3, 3, (2019)
3. arcesetc: ARC Echelle Spectrograph Exposure Time Calculator
B.M. Morris, **T.Z. Dorn-Wallenstein**, *et al.* JOSS, 4, 34 (2019)
2. aesop: ARC Echelle Spectroscopic Observation Pipeline
B.M. Morris & **T.Z. Dorn-Wallenstein**. JOSS, 3, 28 (2018)
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)

**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*

Talk: A New Class of Pulsating Yellow Supergiants: Implications for the Red Supergiant Problem
**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