Benjamin M. Tofflemire
51 Pegasi b Postdoctoral Fellow

CONTACT INFORMATION

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RESEARCH INTERESTS

Planet formation and evolution, structure and evolution of protoplanetary disks, binary star formation, T Tauri stars, accretion diagnostics

APPOINTMENTS

51 Pegasi b Postdoctoral Fellow, UT Austin — Sept 2020 - present
Postdoctoral Fellow, UT Austin — August 2018 - August 2020

EDUCATION

Ph.D. Astronomy — **July 2018**
University of Wisconsin-Madison — Madison, WI, USA
- Advisor: Professor Robert D. Mathieu
- Thesis: *Pulsed Accretion in Eccentric Binaries*

B.S. Astronomy & Physics — **June 2011**
University of Washington — Seattle, WA, USA

RESEARCH

Characterizing Young Eclipsing Binaries — **July 2018 - present**
- Determine orbital solutions and fundamental stellar parameters for a sample of pre-main sequence eclipsing binaries to test models of stellar evolution
- Utilize NIR spectra from IGRINS and light curves from *K2* and *Spitzer*

THYME – *TESS* Hunt for Young and Maturing Exoplanets — **July 2018 - present**
- Lead spectroscopic followup of *TESS* planet candidates discovered in young associations
- Characterizing stellar host properties and radial-velocity variability

Accretion in T Tauri Binary Systems — **June 2012 - July 2018**
- Measured time-variable accretion rates of pre-main sequence binaries to test numerical models
- Characterized the kinematics and spatial distribution of accretion streams feeding young binary star systems with time-series, high-resolution spectroscopy from the SALT telescope

SELECT PEER-REVIEWED PUBLICATIONS (8 FIRST AUTHOR) (29 TOTAL)

First Author Publications

▷ **Tofflemire**, B. M., Rizzuto, A. C., Newton, E. R., et al. 2021, AJ, 161, 171
TESS Hunt for Young and Maturing Exoplanets (THYME) V: A Sub-Neptune Transiting a Young Star in a Newly Discovered 250 Myr Association

▷ **Tofflemire**, B. M., Mathieu, R. D., Johns-Krull, C. 2019, AJ, 158, 245
Accretion Kinematics in the T Tauri Binary TWA 3A: Evidence for Preferential Accretion onto the TWA 3A Primary

▷ **Tofflemire**, B. M., Mathieu, R. D., Herczeg, G. J., et al. 2017b, ApJL, 842, L12
Pulsed Accretion in the Classical T Tauri Binary TWA 3A

▷ **Tofflemire**, B. M., Mathieu, R. D., Ardila, D. R., Akeson, R. L., et al. 2017a, ApJ, 835, 8
Accretion and Magnetic Reconnection in the Classical T Tauri Binary DQ Tau

▷ **Tofflemire**, B. M., Gosnell, N. M., Mathieu, R. D., & Platais, I. 2014, AJ, 148, 61
WIYN Open Cluster Study. LIX. Radial Velocity Membership of the Evolved Population of the Old Open Cluster NGC 6791

▷ **Tofflemire**, B. M., Orio, M., Page, K. L., et al. 2013, ApJ, 779, 22
X-Ray Grating Observations of Recurrent Nova T Pyxidis during the 2011 Outburst

▷ **Tofflemire**, B. M., Wisniewski, J. P., Kowalski, A. F., et al. 2012, AJ, 143, 12
The Implications of M Dwarf Flares on the Detection and Characterization of Exoplanets at Infrared Wavelengths

Awards

51 Pegasi b Postdoctoral Fellowship in Planetary Astronomy	($375,000) **2020**
TESS Cycle 3 Guest Investigator Program	($75,000) **2020**
University of Wisconsin Jansky Award for Outstanding Research	**2017**
UW-Madison Graduate School Conference Presentation Award	($2,400) **2015, 2016, 2017**
Sigma Xi Grants in Aid of Research	($2,500) **2015**
University of Wisconsin Vilas Research Travel Grant	($600) **2015**
University of Wisconsin Bautz Travel Fellowship	($1200) **2015**
AAS 225 Chambliss Student Prize Honorable Mention	**2015**
University of Wisconsin – University Housing Honored Instructor	**2012**
University of Washington's Astronomy Bear Prize Recipient	**2011**
University of Washington Mary Gates Research Scholarship	($4,000) **2010, 2011**

Observing Proposals & Experience

ALMA Cycle 7
- **PI:** Planet Formation and Survival in Newly-Forming Binary Systems (16 hrs: Grade B)

Spitzer DDT
- **PI:** Precision Measurements of Stellar Radii in Young Eclipsing Binaries (94 hrs: Priority 1)

Southern African Large Telescope
- **PI:** Time-Series Spectroscopy of Pre-Main Sequence Binaries (42.5 hrs of P0/P1)

WIYN 3.5-m Telescope
- **PI:** Radial velocity survey of accreting stars in NGC 2264 (2 nights)
- **PI:** Time-series spectroscopy of flare stars in Pleiades star cluster (3 nights)

Las Cumbres Observatories Global Telescope Network
- **PI:** Characterizing Eclipsing Binaries in Young Clusters (240 hrs over 2 semesters)
- Co-I: Time-series photometry of Pre-Main Sequence Binaries (980 hours over 5 semesters)

SMARTS 1.3m
- **PI:** Time-series photometry of Pre-Main Sequence Binaries (107 hours over 4 semesters)
- **PI:** Time-series spectroscopy of Pre-Main Sequence Binary V4046 Sgr (42 hours)

Talks

Cool Stars 20	**August 2018**
Plenary Talk	Boston, MA
AAS 231	**January 2018**
Dissertation Talk	National Harbor, MD
Institute for Theory and Computation (Harvard-CfA)	**March 2017**
Stars and Planets Seminar (Invited)	Cambridge, MA
American Museum of Natural History	**March 2017**
Astronomy Seminar	New York, NY
Space Telescope Science Institute	**March 2017**
Exoplanets, Star and Planet Formation Seminar	Baltimore, MD
University of Texas-Austin	**October 2016**
Stars Seminar (Invited)	Austin, TX
Cool Stars 19	**June 2016**
Contributed Talk	Uppsala, Sweden

Mentoring Experience

TAURUS Mentor Training **Summer 2019**
- Developed and facilitated a mentor training seminar for professors, postdocs, and grad students advising TAURUS Scholars

TAURUS & NSF REU Advising **Summer 2019**
- Advisor to two students (Miguel Gutierrez, Victoria Catlett) on a project to measure accretion-tracing emission lines in NIR spectra, both attended the 235 Winter AAS and published RNAAS

UW-Madison Undergrad Thesis **June 2015 - June 2017**
- Advisor to UW-Madison undergrad Nathan Eggen on project to produce and model the light curves of pre-main sequence binary stars