

# Lindsey Gordon

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## EDUCATION

**University of Minnesota**, Minneapolis, MN, USA

Sep 2021 –

- Graduate student in Astrophysics. **Cumulative GPA: 3.45**

**Wellesley College**, Wellesley, Massachusetts, USA

Sep 2017 – Jun 2021

- B.A. in Astrophysics with Honors, minor in Computer Science.
- **Cumulative GPA: 3.73**
- **Honors Thesis:** Analysis of the Early Rise Light Curves of Four TESS-Observed Supernovae
  - **Thesis Advisors:** Dr. Richard French and Dr. Tansu Daylan (MIT)

## RESEARCH EXPERIENCE

**WOMBAT - MHD Simulation Development**

Jun 2021 –

**UMN**

Supervisor: Dr. Tom W. Jones

- Porting WOMBAT outputs into new Python visualization packages, particularly **yt**.
- Developing ML concurrent analysis to improve performance on HPC systems and post-processing routines to speed up analysis.

**Analysis of the Early Rise Light Curves of Four TESS-Observed Supernovae** Aug 2020 – Jun 2021

Supervisors: Dr. Tansu Daylan (MIT), Dr. Richard French

**Astronomy Dept, Wellesley College**

- Wrote a Python data mining program to identify known Type Ia supernovae observed by TESS.
- Performed detailed follow up including model fitting using Bayesian statistics through **emcee**.

**Mergen: An Unsupervised Pipeline for TESS Light Curve Classification**

Feb 2020 –

**MIT**

Supervisors: Dr. Tansu Daylan, Dr. George Ricker

- Python pipeline to perform unsupervised ML classification and anomaly detection on TESS light curves.
- Feature extraction through a convolutional autoencoders coupled with prepackaged learning algorithms.
- Public Python framework package and 3 papers in progress.

**TESS Follow-Up Observing Program**

Feb 2020 – Jun 2021

Supervisor: Dr. Kim McLeod

**Astronomy Dept, Wellesley College**

- Observing TESS candidate planets using the local 0.7m PlaneWave and performing data reduction.
- Assisting with target scheduling, training new hires, and observational projects for the astronomy research methods course.

**A Compact Multi-Beam Linear Accelerator Prototype**

Aug 2019 – Dec 2019

Supervisor: Dr. Arun Persaud

**Lawrence Berkeley National Laboratory**

- SULI Internship in the Accelerator Technology and Applied Physics Dept.
- Electrical engineering work on parts testing for new components (RF voltage amplifier, microelectromech. wafers) for an energy upgrade to a prototype accelerator design.
- Computational physics work on updating Python simulations of the internal fields and ion motion within the accelerator.

**Searching for Dual Quasars in Archival Hubble Data**

Jun 2019 – Aug 2019

Supervisor: Dr. Eilat Glikman

**Middlebury College**

- Wrote a Python search algorithm to find candidate double quasar systems in the Hubble archive using contour maps. Analyzed resulting density of identified candidates.

**Fiber Optic Fed Spectrometer**

Spring 2019

Supervisor: Dr. Kim McLeod

**Astronomy Dept, Wellesley College**

- Designed the internal optics and guide system for a fiber-optic-fed spectrometer for a 0.7m telescope.

## LANGUAGES & SKILLS

- Python - 5+ years
  - General Packages: NumPy, pandas, matplotlib, PyMySQL, emcee, yt
  - Machine learning: scikit-learn, TensorFlow
  - Astronomy specific: Astropy, Astroquery, SciPy
- HTML/CSS & Javascript - 5+ years
  - Flask, Ajax for dynamic web frameworks

	<ul style="list-style-type: none"> <li>▪ Java, SQL - 2+ years</li> <li>▪ Familiar with: MATLAB, C/C++/C, x86 Assembly</li> <li>▪ VR/AR/MR Development: Unity, SteamVR, Windows MR</li> <li>▪ Fabrication: 3D modeling (SolidWorks) and printing, basic electronics incl. Arduino, soldering, laser cutting, machine shop tool use, optical design</li> <li>▪ Astronomy: Telescope driving, AIJ, SAOs9, TOPCAT</li> <li>▪ Microsoft Office, L<sup>A</sup>T<sub>E</sub>X</li> </ul>	
TEACHING + OUTREACH	<p><b>TA - AST 1001 Exploring the Universe - UMN</b> Sept 2021 –</p> <ul style="list-style-type: none"> <li>▪ Fall 2021 - TA for three 115 minute lab sections per week (~70 students).</li> <li>▪ Spring 2022 - support TA offering make-up labs and rewriting lab manual.</li> </ul> <p><b>Universe @ Home - UMN</b> Sept 2021 –</p> <ul style="list-style-type: none"> <li>▪ Occasional virtual public talks streamed live via the MifA Youtube channel.</li> </ul> <p><b>Universe in the Park - UMN</b> June 2021 – August 2021</p> <ul style="list-style-type: none"> <li>▪ Summer public outreach program that brings short talks, telescopes, and constellation tours to various state parks in MN on weekends.</li> </ul> <p><b>Public Nights - Wellesley College</b> Sept 2017 – March 2020</p> <ul style="list-style-type: none"> <li>▪ Operated Whitin Observatory’s historic telescopes and gave short talks and constellation tours at monthly public nights. Events suspended during COVID.</li> </ul> <p><b>Public Nights - Middlebury College</b> Summer 2019</p> <ul style="list-style-type: none"> <li>▪ Operated small mounted telescopes and gave constellation tours in English and French.</li> </ul> <p><b>Night Assistant - Wellesley College</b> Dec 2018 – Mar 2020</p> <ul style="list-style-type: none"> <li>▪ Night lab TA for ASTR 100 and ASTR 107, 90 students/semester.</li> </ul>	
PUBLICATIONS	<p>[1] J. Rodriguez <i>et al.</i> “TESS Delivers Five New Hot Giant Planets Orbiting Bright Stars from the Full Frame Images” Accepted to ApJ Jan. 2021.</p> <p>[2] T. Daylan, E. Chickles, <b>L. Gordon</b>, <i>et al.</i> “<i>Mergen</i>: Classification and Novelty Detection with the TESS Data” In prep.</p> <p>[3] <b>L. Gordon</b>, T. Daylan, E. Chickles, <i>et al.</i> “TESS Census of Supernovae” In prep.</p> <p>[4] E. Chickles, T. Daylan, <b>L. Gordon</b>, <i>et al.</i> “Novel Stellar Variability in the TESS Data” In prep.</p>	
POSTERS & PRESENTATIONS	<p><b>Wellesley College Ruhlman Conference - Talk</b> May 2021</p> <ul style="list-style-type: none"> <li>▪ 10 min talk on <i>Analysis of the Early Rise Light Curve...</i></li> </ul> <p><b>AAS 237 - Poster &amp; Talk</b> Jan. 2021</p> <ul style="list-style-type: none"> <li>▪ Poster on <i>Classification of Supernovae in TESS Data</i> (1/15). Short talk during the <i>Mining TESS Data with Machine Learning and Other Advanced Methods</i> Special Session (1/14).</li> </ul> <p><b>KNAC 2020 Symposium - Talk</b> Oct. 3 2020</p> <ul style="list-style-type: none"> <li>▪ Ten minute talk on <i>Mergen</i> and submitted a short paper to the symposium proceedings.</li> </ul> <p><b>TESS Science Talk</b> Sept. 9 2020</p> <ul style="list-style-type: none"> <li>▪ Hour talk on <i>Mergen</i> at the weekly TESS Science Talk.</li> </ul> <p><b>Summer MKI Undergraduate Research Forum - Talk</b> Aug. 24 2020</p> <ul style="list-style-type: none"> <li>▪ Ten minute talk on <i>Mergen</i> at the final project presentations for MIT’s summer research program.</li> </ul> <p><b>LBNL Fall Presentations - Poster</b> Dec. 6 2019</p> <ul style="list-style-type: none"> <li>▪ Presented poster on <i>A Compact Multi-Beam Linear Accelerator</i> at a session held at LBNL.</li> </ul> <p><b>KNAC 2019 Symposium - Talk</b> Oct. 5 2019</p> <ul style="list-style-type: none"> <li>▪ Ten minute talk on <i>Searching for Dual Quasars...</i> and paper in symposium proceedings.</li> </ul> <p><b>Middlebury College Summer Research Poster Session - Poster</b> July 25 2019</p> <ul style="list-style-type: none"> <li>▪ Poster on <i>Searching for Dual Quasars...</i></li> </ul>	
AWARDS & HONORS & FELLOWSHIPS	<p><b>NSF Data Science in Multi-Messenger Astronomy Fellowship</b> 2022-2023</p>	

- A year of funding, training, and professional development for the application of modern data science methods to astrophysics research.

**UMN Astrophysics - Best Grad TA Award** Fall 2021

**John Charles Duncan Prize in Astronomy** 2021

- Department award given to one graduating astronomy senior in recognition of outstanding interest, ability, and accomplishment in the study of astronomy.

**NASA Massachusetts Space Grant** Spring 2020, Fall 2020, Spring 2021

- Funding for TESS follow-up observing program research at Wellesley.

**Albright Institute for Global Affairs Fellowship** 2020

- Interdisciplinary fellowship on global affairs. Month of programming work and funding for an internship abroad.

#### MISC.

**Welp: A Yelp Reconstruction** Oct. 2020

- Built a Yelp-style database and communication platform using SQL, Flask, Ajax & Jinja2.

**AstroHackWeek 2020** 8/31-9/4 2020

- Led project to convert existing code into a GitHub package **hubble\_contours**, which produces contour plots from Hubble images.

**Wellesley Resources App: UX Design** July 2020

- Designed and user-tested a UI for a hypothetical application to consolidate health, career, and residential life resources. ([link](#))

**Book Conservation Assistant, Wellesley LTS** Sep 2017 – Mar 2020

- Work-study job repairing circulating library collections. 12-18 hours/week. Unable to transition to remote during COVID.

**MIT Astronomy Field Camp, Lowell Observatory** January 2019

- Short project on Python analysis of stellar flares.

#### COVID CANCELLATIONS

**Albright Institute Internship** Summer 2020

- Fellows receive funding for a summer internship abroad. I intended to use mine for astronomy research in summer 2020, which was cancelled due to travel restrictions.

**AstroTech Summer School, UC Berkeley** Summer 2020

- Accepted into summer week-long workshop on astronomy instrumentation, cancelled. Invited to re-apply with priority acceptance for 2021.