# Lindsey Gordon

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## EDUCATION

**University of Minnesota**, Minneapolis, MN, USA — Sep 2021 –

- Graduate student in Astrophysics
- 2022-2023 Data Science in Multi-Messenger Astronomy Fellowship

**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)
- Awards/Fellowships: John Charles Duncan Prize in Astronomy (2021), NASA Massachusetts Space Grant (Spring & Fall 2020, Spring 2021), Albright Institute for Global Affairs Fellowship (2020)

## RESEARCH EXPERIENCE

**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.
- Modeled light curves using emcee for comparison against the fireball model.

***Mergen*: An Unsupervised Pipeline for TESS Light Curve Classification** — Feb 2020 – Jun 2021
Supervisors: Dr. Tansu Daylan, Dr. George Ricker — **MIT**

- Producing a Python pipeline to perform unsupervised machine learning classification and anomaly detection of TESS light curves.
- Feature extraction through a convolutional autoencoders coupled with prepackaged learning algorithms.
- Public Python framework package and 2+ papers in progress.

**TESS Follow-Up Observing Program** — Feb 2020 –
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 - 4+ years
  - General Packages: NumPy, pandas, matplotlib, PyMySQL, emcee
  - Machine learning: scikit-learn, TensorFlow
  - Astronomy specific: Astropy, Astroquery, SciPy
- HTML/CSS & Javascipt - 4+ years
  - Flask, Ajax for dynamic web frameworks
- Java, SQL - 1+ years
- Familiar with: MATLAB, C/C++/C, x86 Assembly

- VR/AR/MR Development: Unity, SteamVR, Windows MR
- Fabrication: 3D modeling (SolidWorks) and printing, basic electronics incl. Arduino, soldering, laser cutting, machine shop tool use, optical design
- Astronomy: Telescope driving, AIJ, SAOds9, TOPCAT
- Microsoft Office, LaTeX

**ADDITIONAL WORK**

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

- Hackweek for astronomy data science. Led project to convert existing code into a GitHub package **hubble_contours**, which produces contour plots from drizzled Hubble files at a given list of input coordinates.

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

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

**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)**

**Night Assistant - Astronomy Department, Wellesley College** Dec 2018 – Mar 2020

- Night lab TA for ASTR 100 and ASTR 107, 90 students/semester.

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

Python Analysis of K2 Stellar Flares Supervisor: Dr. Joe Llama

- Month long research project analyzing usefulness of various Python packages for flare detection in K2 data.

**PUBLICATIONS**

[1] J. Rodriguez ***et al.*** "TESS Delivers Five New Hot Giant Planets Orbiting Bright Stars from the Full Frame Images" Accepted to ApJ Jan. 2021.

[2] T. Daylan, E. Chickles, **L. Gordon**, *et al.* "*Mergen:* Classification and Novelty Detection with the TESS Data" In prep.

[3] **L. Gordon**, T. Daylan, E. Chickles, *et al.* "TESS Census of Supernovae and AGN" In prep.

[4] E. Chickles, T. Daylan, **L. Gordon**, *et al.* "Novel Stellar Variability in the TESS Data" In prep.

**POSTERS & PRESENTATIONS**

**Wellesley College Ruhlman Conference** May 2021

- Ten minute talk on *Analysis of the Early Rise Light Curves of Four TESS-Observed Supernovae*.

**AAS 237** Jan. 2021

- Poster on *Classification of Supernovae in TESS Data* (1/15). Short talk during the *Mining TESS Data with Machine Learning and Other Advanced Methods* Special Session (1/14).

**KNAC 2020 Symposium - Talk** Oct. 3 2020

- Ten minute talk on *Mergen* and submitted a short paper to the symposium proceedings.

**TESS Science Talk** Sept. 9 2020

- Hour talk on *Mergen* at the weekly TESS Science Talk.

**Summer MKI Undergraduate Research Forum - Talk** Aug. 24 2020

- Ten minute talk on *Mergen* at the final project presentations for MIT's summer research program.

**LBNL Fall Presentations - Poster** Dec. 6 2019

- Presented poster on *A Compact Multi-Beam Linear Accelerator* at a session held at LBNL.

**KNAC 2019 Symposium - Talk** Oct. 5 2019

- Ten minute talk on *Searching for Dual Quasars in Archival Hubble Data* and submitted a paper to the symposium proceedings.

**Middlebury College Summer Research Poster Session - Poster** July 25 2019

- Presented poster on *Searching for Dual Quasars in Archival Hubble Data* at the poster session for summer science research at Middlebury.