Lindsey Gordon

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EDUCATION

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

- Graduate student in Astrophysics

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 Simulations — Jun 2021 –
Supervisor: Dr. Tom W. Jones — **UMN**

- 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 – Jun 2021
Supervisors: Dr. Tansu Daylan, Dr. George Ricker — **MIT**

- 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 –
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, yt
  - Machine learning: scikit-learn, TensorFlow
  - Astronomy specific: Astropy, Astroquery, SciPy
- HTML/CSS & Javascript - 4+ years
  - Flask, Ajax for dynamic web frameworks

- Java, SQL - 2+ 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

TEACHING + OUTREACH

TA - AST 1001 Exploring the Universe - UMN Sept 2021 –
- TA for three 115 minute lab sections per week + proctoring exams.

Universe in the Park - UMN June 2021 – August 2021
- Summer public outreach program that brings short talks, telescopes, and constellation tours to various state parks in MN on weekends.

Public Nights - Wellesley College Sept 2017 – March 2020
- Operated Whitin Observatory's historic telescopes and gave short talks and constellation tours at monthly public nights. Events suspended during COVID.

Public Nights - Middlebury College Summer 2019
- Operated small mounted telescopes and gave constellation tours in English and French.

Night Assistant - Wellesley College Dec 2018 – Mar 2020
- Night lab TA for ASTR 100 and ASTR 107, 90 students/semester.

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" 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 - Talk May 2021
- 10 min talk on *Analysis of the Early Rise Light Curve....*

AAS 237 - Poster & Talk 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...* and paper in symposium proceedings.

Middlebury College Summer Research Poster Session - Poster July 25 2019
- Poster on *Searching for Dual Quasars....*

AWARDS & FELLOWSHIPS

NSF Data Science in Multi-Messenger Astronomy Fellowship 2022-2023
- A year of funding, training, and professional development for the application of modern data science methods to astrophysics research.

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.

COVID CANCELLATIONS

Albright Institute Internship 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 2020

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