

# KATHERINE E. MELBOURNE

☎ +1-563-676-4367 ✉ [melbournekatherine@gmail.com](mailto:melbournekatherine@gmail.com) [LinkedIn](#) [katiemelbourne.me](https://katiemelbourne.me)

## Education

---

### University of Colorado Boulder

May 2025 (Anticipated)

*B.S. Aerospace Engineering, Astrodynamics and Satellite Navigation concentration*

3.73 GPA

*Vision, Autonomy, and Decision Research Laboratory STARLIT Graduate Research Assistant*

### Yale University

December 2019

*B.S. Astrophysics, 2019 Brady-Johnson Grand Strategy grant recipient for space policy*

3.74 GPA

## Work and Research Experience

---

### Ball Aerospace & Technologies Corporation

April 2020 – June 2023, Summer 2019

*Systems Engineer I*

*Broomfield, CO*

- Calculated optical alignment corrections on shift as a James Webb Space Telescope Wavefront Sensing Scientist
- Controlled JWST alignment procedure documentation covering 4 months of 24/7 commissioning operations
- Developed tool to automatically sync databases saving 12000+ hours of program funding
- Led 4 weekly Technical Baseline and Engineering Review Boards for National Defense satellite program
- Prepared proposal for Space Domain Awareness mission in response to government RFI

*Associate Systems Engineer*

*Boulder, CO*

- Performed trade study on quantum-assisted super resolution and applications with research team
- Managed requirements for Roman Space Telescope contract between Ball and NASA GSFC
- Presented to team of 80+ engineers on science applications of the Roman Space Telescope and JWST

*Strategic Operations Intern and Brooke Owens Fellow*

*Arlington, VA*

- Synthesized business strategy across company competencies to expedite future procurement campaigns
- Wrote engaging articles about Ball's heritage and work in science and engineering

### National Aeronautics and Space Administration

Summer 2018, Spring 2017

*Astrophysics Research Intern*

*Greenbelt, MD*

- Characterized spectra of M dwarf stars to support photochemical analysis of exoplanet atmospheres
- Extended and improved previous analysis completed by MUSCLES collaboration from 15 to 69 stars

*Office of International and Interagency Relations Intern*

*Washington, DC*

- Drafted and negotiated 15 agreements that align with the missions of NASA nationally and globally
- Finalized 3 agreements with foreign partners by communicating diplomatically with their legal teams
- Spearheaded and ensured success of Aeronautics Research Associate Administrator's visit to Russia

### University of Chile Astronomy Department

Summer 2016

*Tetelman Fellow for International Research in the Sciences*

*Santiago, Chile*

- Explored relationship between stellar activity and radial velocity data on exoplanets
- Expedited runtime 500% by parallel-processing codes in Python and associated astronomy packages
- Observed exoplanet targets through Swiss Euler 1.2m telescope at La Silla Observatory

## Selected Publications and Presentations

---

- Hicks, B., Chonis, T., Coppock, E., Gordon, M., **Melbourne, K.**, et al. “*James Webb Space Telescope Wavefront Commissioning Contingency Response*”, 2022 (doi: 10.1117/12.2630359)
- **Melbourne, K.**, Youngblood, A., France, K. et al. “*Estimating the Ultraviolet Emission of M dwarfs with Exoplanets from Ca II and H $\alpha$* ”, *The Astronomical Journal*, 2020 (doi: 10.3847/1538-3881/abf5c)
- **North Central Region of the Astronomical League Convention speaker**, Moline, IL, 2019, “*Our Coolest Neighbors: M Dwarfs and the Search for Earth 2.0*”
- **Conference for Undergraduate Women in Physics**, New York, NY, 2018, “*The Effects of Stellar Activity on Radial Velocity Exoplanet Detection*” (First Place presentation award)

## Awards, Outreach, and Interests

---

- 2023 Submitted public comment on FAA proposed rule to mitigate orbital debris (Comment ID FAA-2023-1858-0031)
- 2022 Ball Aerospace Performance Execution Program Award recipient for contributions to JWST commissioning
- 2021/2022 Ball Aerospace “Big Sister” Mentor for Women in Aerospace at CU Boulder
- 2021 50 mile Prairie Spirit Trail Ultramarathon finisher
- 2019 Universities Space Research Association Distinguished Undergraduate
- 2018 Women in Aerospace Scholar, John Mather Nobel Scholar, and Connecticut Space Grant Research Fellow
- 2016 Horkheimer/Smith First-Place Scholarship recipient for Youth Astronomy Outreach