

# Katherine Melbourne

4450 Old Ivy Court, Bettendorf, IA 52722 • katiemelbourne.me • 563-676-4367 • katherine.melbourne@yale.edu

## EDUCATION

**Yale University;** *3.74 GPA, Astrophysics, B.S.;* New Haven, CT (Anticipated graduation: December 2019)

- *Relevant Courses:* Astrostatistics and Data Mining, Differential Equations, Linear Algebra, Mathematical Methods of Physics, Data Science for Public Policy, Development under Fire, Rise of China, Grand Strategy
- *Awards and Grants:* 2019 National Space Club Keynote Scholarship Finalist, 2018 Women in Aerospace Foundation Scholarship, 2018 John Mather Nobel Scholar, 2017 NASA Connecticut Space Grant Consortium Undergraduate Research Fellowship, 2016 Astronomical League Horkheimer/Smith Youth Service Award for Astronomy Outreach, 2014 National Merit Finalist

## WORK EXPERIENCE

**Ball Aerospace;** *Brooke Owens Fellow and Strategic Operations Intern;* Arlington, VA (Summer 2019)

- Synthesize business strategy across company core competencies to expedite future procurement campaigns
- Strategize company's role in new space industry initiatives and opportunities
- Create engaging platforms of communication about Ball's heritage and work in science and engineering

**Center for Teaching and Learning;** *STEM Education Undergraduate Fellow;* New Haven, CT (2017—2018)

- Operated communications for Helmsley STEM Education Program at Yale
- Coordinated professional events with leaders in STEM education research from universities nationwide

**National Aeronautics and Space Administration;** *Officer Support Intern;* Washington, D.C. (Spring 2017)

- 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
- Briefed senior officials about upcoming meetings with foreign administrators and international trips
- Spearheaded and ensured success of Aeronautics Research Associate Administrator's visit to Russia

## RESEARCH PROJECTS

**National Aeronautics and Space Administration;** *Astrophysics Research Assistant;* Greenbelt, MD (2018—Present)

- Characterize spectra of M dwarf stars to support photochemical analysis of exoplanet atmospheres
- Extend and improve previous analysis completed for MUSCLES collaboration from 15 to 107 stars
- Lead author on paper in preparation with anticipated publication in fall 2019
- First-Place Research Poster out of 157 science category submissions

**Universidad de Chile;** *Tetelman Fellow for International Research in Science;* Santiago, Chile (2016—2018)

- 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
- Forged partnership between the universities for future undergraduate research exchanges
- First-Place Research Presentation at 2018 Conference for Undergraduate Women in Physics

**Yale University;** *Yale College Dean's Research Fellow;* New Haven, CT (Summer 2017)

- Collaborated with 300 physicists on Cryogenic Underground Observatory for Rare Events experiment
- Developed new analysis step to compare calibration and simulation data and identify potential problems
- Coded project in C/C++ through ROOT software system designed for particle physics analysis
- Presented research poster at American Physical Society Division of Nuclear Physics Conference

**Boston University;** *Research Internship in Science and Engineering for Astronomy;* Boston, MA (Summer 2014)

- Analyzed data from Cerro Tololo Observatory to produce an HR diagram of M Dwarf stars
- Formulated and tested new image processing method to reduce raw astronomical observations

## LEADERSHIP POSITIONS

**Kappa Kappa Gamma Zeta Xi Chapter;** *President;* New Haven, CT (2018—Present)

- Direct board of 16 leaders and their respective committees to run campus chapter of 120 women
- Resolve disputes and issues raised by members as head of chapter standards committee
- Represent chapter by corresponding professionally with members, national board, and media

**Yale Women in Physics;** *Co-President and Secretary General;* New Haven, CT (2015—2018)

- Mobilize efforts to support and unite women in physics and STEM fields through outreach events
- Mentor younger students starting their careers in physics about academic opportunities
- Delegate responsibilities for weekly event management to other board members
- Facilitate initiative to bring inaugural Schultz Undergraduate Prize visiting lecturer to campus
- Volunteer for Girls Science Investigations to teach local middle school girls about science

**Camp Kesem Yale;** *Head Counselor and Development Committee Member;* New Haven, CT (2015—2017)

- Fundraised \$75,000 a year to send kids affected by cancer in their families to summer camp at no cost
- Cultivated positive environment for 100 campers and 60 counselors by creating engaging activities
- Promoted cooperation and conflict resolution among campers and counselors

## SPECIAL SKILLS

**Programming Experience:** Python, R, C/C++ through ROOT, HTML/CSS, Linux and Mac OS X

**Interests:** 2-time Marine Corps Marathon Finisher in training for 3rd marathon, Co-host of Get This Girl a Job Podcast