

Katherine Melbourne

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EDUCATION

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

- *Relevant Courses:* Stellar Astrophysics, Galactic and Extragalactic Astronomy, Astrostatistics and Data Mining, Advanced Classical Mechanics, Mathematical Methods of Physics, Advanced Electricity and Magnetism, Data Science for Public Policy, The Rise of China, U.S. Foreign Policy History 1898-2017
- *Awards and Grants:* 2018 John Mather Nobel Scholar, 2018 Women in Aerospace Foundation Scholarship, 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

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 (Summer 2018)

- 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

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

- 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

Yale Precision Marching Band; *Class Representative and Section Leader;* New Haven, CT (2015—2018)

- Fostered enthusiasm in upper woodwind section during Yale football, hockey, and basketball games
- Enhanced performances by coordinating music and drills for 20 shows a year
- Stimulated growth of section and organization through recruitment of new members

State of Iowa Youth Advisory Council; *Bill Leader and Committee Member;* Des Moines, IA (2013—2015)

- Orchestrated lobbying efforts to gain legislator support of bill banning indoor tanning for minors
- Addressed council members and state senate sub-committee about importance of tanning legislation

SPECIAL SKILLS

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