Katherine Melbourne

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EDUCATION

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

- *Relevant Courses:* Astrostatistics and Data Mining, Laboratory Instrument Design and Mechanical Arts, Advanced Classical Mechanics, Mathematical Methods of Physics, Advanced Electricity and Magnetism
- *Awards:* 2017-2018 NASA Connecticut Space Grant Consortium Undergraduate Research Fellowship, 2016 Astronomical League Horkheimer/Smith Youth Service Award for Astronomy Outreach, First-Place Research Presentation at 2018 Conference for Undergraduate Women in Physics

WORK EXPERIENCE

National Aeronautics and Space Administration; *Research Assistant;* Greenbelt, MD (Summer 2018)

- Synthesize knowledge of exoplanets and stellar spectra as collaborator on MUSCLES project
- Characterize ultraviolet spectra of M and K Dwarf stars to determine habitability of their exoplanets

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. (Jan—May 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
- Oversaw and ensured success of Aeronautics Research Associate Administrator's visit to Russia
- Spearheaded transition from printed to digital trip books and agendas for senior officials traveling abroad

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

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

- Fundraise $75,000 a year to send kids affected by cancer in their families to summer camp at no cost
- Cultivate positive environment for 110 campers and 60 counselors by creating engaging activities
- Promote cooperation and conflict resolution among campers and counselors

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

- Foster enthusiasm in upper woodwind section during Yale football, hockey, and basketball games
- Enhance performances by coordinating music and drills for 20 shows a year
- Stimulate 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 senate sub-committee about importance of tanning legislation

RESEARCH PROJECTS

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

- Explore the relationship between stellar activity and radial velocity data on exoplanets
- Expedite runtime 500% by parallel-processing codes in Python and associated astronomy packages
- Observe exoplanet targets through Swiss Euler 1.2m telescope at La Silla Observatory
- Forge partnership between the universities for future undergraduate research exchanges

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

- Collaborated with 300 physicists on Cyrogenic 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

SPECIAL SKILLS

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