

Amy Fare

Data | Computing | Education

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EDUCATION

Western University, London
Master of Science, Astronomy

September 2018 - April 2020

McMaster University, Hamilton
Bachelor of Integrated Science
Minor in Physics

September 2014 - April 2018

RESEARCH EXPERIENCE

Research Assistant, Dept. of Physics & Astronomy, Dr. Els Peeters
Western University, London, ON

May 2017 - April 2020

I investigated the grandPAH hypothesis - the notion that interstellar PAH populations are made up of a small number of dominant, robust PAH species - in reflection nebulae and HII regions. I developed and applied a quantitative measure for PAH preference in observed emission spectra, and tested the degeneracy of PAH spectra fit to the emission observed in several interstellar objects. I am expecting to publish my results as a refereed paper.

Honours thesis, Dept. of Physics & Astronomy, Dr. Alison Sills
McMaster University, Hamilton, ON

January 2017 - April 2018

I developed and studied simulations of globular clusters with helium-rich populations. I constructed a semi-analytic formula for the main-sequence lifetime of helium-rich stars, and conducted N -body simulations of globular clusters with helium-rich secondary populations to investigate how their presence impacts globular cluster dynamics.

Research Assistant, Dept. of Physics & Astronomy, Dr. Doug Welch
McMaster University, Hamilton, ON

May - August 2015, 2016

Using visual observations from AAVSO.net telescopes, I constructed a more complete and accurate set of finder charts for monitoring of variable stars in globular clusters by advanced amateur astronomers. I reduced, analyzed, and visualized photometric data, and documented the methods and data products I developed.

OTHER WORK EXPERIENCE

Numerade
Educator

March 2020 - Present

Created whiteboard-style videos explaining material from high school and university Physics courses.

Freelance

Private Tutor

2016 - Present

Provided one-on-one Math & Physics tutoring for courses at elementary school to university levels.

Western University

Graduate Teaching Assistant - tutorial

September 2019 - April 2020

Led tutorials for undergraduate first-year Physics courses offered at Western University, as well as the Integrated Science program, and graded exams and other assignments.

Graduate Teaching Assistant - laboratory

September 2018 - April 2019

Led laboratory sessions for undergraduate first-year Physics courses offered at Western University.

McMaster University

MIETL Student Scholar

2015 - 2016

Designed an interactive undergraduate course centred around planetarium use by students, and tested the effectiveness of planetariums as supplements to traditional lectures.

PUBLICATIONS

Fare, A., Webb, J.J. and Sills, A., 2018. The effect of stellar helium abundance on dynamics of multiple populations in globular clusters. *Monthly Notices of the Royal Astronomical Society*, 481(3), pp.3027-3032.

CONFERENCES & PRESENTATIONS

Canadian Undergraduate Physics Conference (CUPC)

October 2017

Presented work on grandPAHs to an audience of undergraduate students and graduate judges from diverse physics disciplines.

American Association of Variable Star Observers (AAVSO)

November 2016

Presented variable stars in globular clusters to an audience of professional and advanced amateur astronomers.

Canadian Undergraduate Physics Conference (CUPC)

October 2016

Presented research on variable stars in globular clusters to an audience of undergraduate students and graduate judges from diverse physics disciplines.

International Planetarium Society Conference (IPS)

June 2016

Presented pedagogical research on planetariums in higher education to an audience of planetarium & museum directors, educators, and researchers.

McMaster Research in Teaching and Learning Conference

December 2015

Presented pedagogical research on planetariums in higher education to an audience of pedagogical researchers.

SCHOLARSHIPS & AWARDS

Western University

NSERC USRA

April 2018

Undergraduate Pre-thesis Award

April 2017

(Half of) sponsored trip to Ottawa for CUPC

October 2017

McMaster University

(Half of) sponsored trip to Ottawa for CUPC

October 2017

Sponsored trips to Boston, Halifax, and Warsaw for AAVSO, CUPC, and IPS

2016

William McKeon Memorial Academic Grant in Physics

2015

\$1000 entrance scholarship

2014

EXTRA-CIRRICULAR

International Genetically Engineered Machine: McMaster Team

2016 - 2017

As the head of the dry lab (programming team), I recruited and managed a team of programmers, doing computational biology research in coordination with the wet lab. We developed an agent-based model of quorum sensing in bacteria populations.

SKILLS & EXPERIENCE

Programming

Python, C++, Lua, SQL, Perl, R, MATLAB, Java

Publishing

L^AT_EX, HTML/CSS/Javascript

Working

UNIX-like operating systems, ArcGIS