

# Amy Fare

Data | Computing | Education

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## EDUCATION

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**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

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**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.

**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 secondary populations.

**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.

## OTHER WORK EXPERIENCE

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**Brainy Education Center**  
*Science Instructor*

*June 2020 - Present*

Planned, developed and delivered the Science component of a two-week summer academic enrichment program for students in grades 5-9.

**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**

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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**

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### **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**

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### **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

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### 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

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<b>Programming</b>	Python, C++, Lua, SQL, Perl, R, MATLAB, Java, Machine Learning
<b>Publishing</b>	L <sup>A</sup> T <sub>E</sub> X, HTML/CSS/Javascript
<b>Working</b>	UNIX-like operating systems, ArcGIS