

Gwendolyn Eadie | CV

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Current Position

Assistant Professor, Astrostatistics

Dept. of Astronomy & Astrophysics and Dept. of Statistical Sciences

University of Toronto

Aug 2019 – present

Education

Degrees.....

PhD Physics & Astronomy

Supervisor: William Harris

McMaster University

Sep 2013 – Aug 2017

MSc Physics, Engineering Physics, & Astronomy

Supervisors: Lawrence Widrow, Stéphane Courteau

Queen's University

Sep 2010 – Mar 2013

BSc Physics, Minor in Publishing

Honours Thesis in Astronomy

Supervisors: Harvey Richer (UBC) & Michael Thewalt (SFU)

Simon Fraser University

Sep 2005 – Jun 2010

Credentials.....

Teaching and Learning Scholar Certificate

MacPherson Institute

McMaster University

Sep 2016 – May 2017

Teaching and Learning Foundations Certificate

MacPherson Institute

McMaster University

Sep 2015 – May 2016

Awards & Honors

Most Recent.....

Dunlap Postdoctoral Fellowship (declined)

70,000 CAD per year plus research budget

Dunlap Institute for Astronomy & Astrophysics

2019 - 2022

Dunlap Institute, University of Toronto

NSERC Postdoctoral Fellowship

45,000 CAD per year

Natural Sciences & Engineering Research Council of Canada

Apr 2019 – Jul 2019

University of Washington

J.S. Plaskett Medal

Gold medal, 700 CAD

Canadian Astronomical Society (CASCA) & Royal Astronomical Society of Canada (RASC)

May 2018

CASCA & RASC

NextProf: Science Participant

Competitive program, all travel expenses covered

Physics Department, Astronomy Department

May 2018

University of Michigan

Ann Arbor, MI

Moore, Sloan, and WRF Innovation in Data Science Fellowship <i>65,000 USD per year and 25,000 USD research budget</i> eScience Institute and Department of Astronomy	Sep 2017 – Aug 2019 <i>University of Washington</i> Seattle, WA
at McMaster University	
Nominated and short-listed, Fall 2017 Valedictorian	Oct 2017
Alexander Graham Bell Canadian Graduate Scholarship (CGS) <i>35,000 CAD per year, Natural Sciences & Engineering Research Council</i>	May 2016 – Aug 2017
NSERC Postgraduate Scholarship (upgraded to CGS in 2016) <i>21,000 CAD per year, Natural Sciences & Engineering Research Council</i>	May 2015 – May 2016
Marauder Scholar <i>Certificate, Academic and athletic-based award</i>	2015 – 2016
Ontario Graduate Scholarship <i>15,000 CAD, Provincial</i>	Sep 2014 – Aug 2015
Yates Scholarship Travel Award <i>500 CAD, School of Graduate Studies</i>	May 2015 - Aug 2015
Best Presentation, Graduate Student Symposium Day <i>25 CAD, Department of Physics & Astronomy</i>	Sept 2014
at Conferences	
Best SPEED and Poster Presentation, Joint Statistical Meetings (JSM) <i>Section on Statistics and Data Science Education</i>	Jul 2019 <i>Denver, CO</i>
Best Student Presentation, Canadian Astronomical Society (CASCA) Meeting <i>200 CAD, CASCA Board of Directors</i>	Jun 2017 <i>Edmonton, AB</i>
Best Student Presentation, CASCA Meeting <i>Certificate, CASCA Student Board</i>	Jun 2017 <i>Edmonton, AB</i>
Best Poster Presentation, Galaxy Halos conference <i>Selected by participants</i>	Mar 2017 <i>Puerto Ayora, Ecuador</i>
Student Travel Grant, IAU XXIX General Assembly <i>750 USD, International Astronomical Union (IAU)</i>	Aug 2015 <i>Honolulu, HI</i>
Honourable Mention Presentation, JSM <i>25 USD, ASA Section on Physical & Engineering Sciences</i>	Aug 2015 <i>Seattle, WA</i>
Best Student Poster, European Southern Observatory (ESO) Workshop <i>500€, ESO Workshop Committee</i>	Oct 2014 <i>Garching, Germany</i>
Honourable Mention Presentation, JSM <i>25 USD, ASA Section on Physical & Engineering Sciences</i>	Aug 2014 <i>Boston, MA</i>
Honourable Mention Student Presentation <i>Certificate, CASCA Board of Directors and CASCA Student Board</i>	June 2014 <i>Quebec, QB</i>
at Queen's University	
Queen Elizabeth II Grad. Scholarship in Science & Technology <i>15,000 CAD</i>	Sep 2010 – Aug 2011
Graduate Entrance Tuition Award <i>6,248 CAD</i>	Sep 2010 – Aug 2011

Graduate Award 3,760 CAD	Sep 2010 – Aug 2012
Ontario University Athletics Academic All-Star <i>Academic and athletic-based award, Provincial level</i> at Simon Fraser University	Sep 2010 – Apr 2011
Convocation Speaker, BSc. Graduating Class	June 2010
Midgley & Stryjak Celebration of Life Award <i>1000 CAD, Service to the SFU Community and the Community at Large</i>	June 2010
Teaching Awards & Nominations	
Nominated, Leppmann Teaching Assistance Excellence Award <i>Graduate Students Association</i>	Sep 2015 – Aug 2016 <i>McMaster University</i>
SGPS Teaching Assistant/Teaching Fellow Excellence Award <i>500 CAD, School of Graduate & Professional Students</i>	Sep 2012 – Mar 2013 <i>Queen's University</i>
Certificate of Achievement for Excellence in Teaching <i>Alma Mater Society</i>	Sep 2012 – Mar 2013 <i>Queen's University</i>
Finalist (top 10), Knapper Award for Excellence in Teaching <i>Alma Mater Society</i>	Mar 2013 <i>Queen's University</i>

Publications

Peer-Reviewed Journal Articles.....

1. Submitted to *AJ*
Springford, A., **G. Eadie**, D. Thomson (2019). "Improving the Lomb-Scargle Periodogram with the Thomson Multitaper".
2. **Eadie, G.**, D. Huppenkothen, A. Springford, and T. McCormick (2019). "Introducing Bayesian Analysis with m&m's®: an active-learning exercise for undergraduates". *Journal of Statistics Education*, 8pp.
3. **Eadie, G.** and M. Jurić (2019) "The cumulative mass profile of the Milky Way using globular cluster kinematics from Gaia DR2", *The Astrophysical Journal*, 875:2, 9pp.
4. Graham, M. + 118 co-authors including **G. Eadie** (2019) "The Zwicky Transient Facility: Science Objectives" *PASP Focus Issue on the Zwicky Transient Facility*.
5. Bellm, E. + 116 co-authors including **G. Eadie** (2018) "The Zwicky Transient Facility: System Overview, Performance, and First Results", *Publications of the Astronomical Society of the Pacific*, Vol 131, Issue 995, pp. 018002
6. **Eadie, G.**, B. Keller, and W. Harris (2018) "Estimating the Milky Way's Mass via Hierarchical Bayes: A Blind Test on MUGS2 Simulated Galaxies". *The Astrophysical Journal*, 865:72, 17pp.
7. **Eadie, G.**, A. Springford, and W. Harris (2017). "Erratum: "Bayesian Mass Estimates of the Milky Way: Including Measurement Uncertainties with Hierarchical Bayes" (2017, ApJ, 835, 167)", *The Astrophysical Journal*, 838: 76, 3 pp.
8. **Eadie, G.**, A. Springford, and W. Harris (2017). "Bayesian Mass Estimates of the Milky Way: Including Measurement Uncertainties with Hierarchical Bayes", *The Astrophysical Journal*, 835(2), 167.
9. Harris, W., S. Ciccone, **G. Eadie**, et al. (2016). "Globular Cluster Systems in Brightest Cluster Galaxies. III: Beyond Bimodality", *The Astrophysical Journal*, 835(1), 101.

10. **Eadie, G.** and W. Harris (2016). "Bayesian Mass Estimates of the Milky Way: The Dark and Light Sides of Parameter Assumptions". *The Astrophysical Journal*, 829(1), 108.
11. **Eadie, G.**, W. Harris, and L. Widrow (2015). Estimating the Galactic Mass Profile in the Presence of Incomplete Data. *The Astrophysical Journal*, Volume 806(1) 54.

Conference Proceedings.....

1. **Eadie, G.**, W. Harris, L. Widrow, and A. Springford (2015). "Tracing the Galactic Halo: Obtaining Bayesian mass estimates of the Galaxy in the presence of incomplete data", Volume 11, Symposium S317, *Proceedings of the International Astronomical Union*, pp 296-297.
2. **Eadie, G.**, W. Harris, and A. Springford, (2015). "Incomplete Data and Measurement Error in the Galactic Mass Estimation Problem". *2015 Joint Statistical Meetings (JSM) Proceedings*, American Statistical Association (ASA), pp 792-799.
3. **Eadie, G** (2014). "Measuring the Mass of a Galaxy: An evaluation of the performance of Bayesian mass estimates using statistical simulation". *2014 JSM Proceedings*, ASA, pp 3442-3454.

White Papers and Specialized Reports.....

1. Siemiginowska, A., **G. Eadie**, I. Czekala, E. Feigelson, E.B. Ford, V. Kashyap, M. Kuhn, T.Loredo, M.Ntampaka, A. Stevens, + 42 co-authors (2019) "Astro2020 Science White Paper: The Next Decade of Astroinformatics and Astrostatistics".
2. Graham, M., Bellm, E., Bektsev, D., **Eadie, G.**, Huppenkothen, D., Davenport, J., Fremling, C., Sharma, Y., Kulkarni, S., Walters, R., Blagorodnova, N., Neill, J., Miller, A., Taddia, F., Lunnan, R., Taggart, K., Perley, D., and Goobar, A. (2018) ZTF Bright Transient Survey classifications. *The Astronomer's Telegram*. No. 11745. (Made observations with the 10-meter telescope at Apache Point Observatory).

Dissertations.....

1. **Eadie, G.** (2017). "Lights in Dark Places: Inferring the Milky Way Mass Profile using Galactic Satellites and Hierarchical Bayes". McMaster University, Doctoral Thesis.
2. **Eadie, G.** (2013). "Measuring the Mass of a Galaxy: An evaluation of the performance of Bayesian mass estimates using statistical simulation". Queen's University at Kingston. Master's Thesis.
3. **Eadie, G.** (2010). "A PAndAS Project: Measuring structural parameters of globular clusters in M31." Simon Fraser University. BSc Honours Thesis.

Magazine Articles.....

Volunteer magazine columnist (2011-2017) for *Vista*, the monthly publication of the Seniors Association Kingston Region. Over 40 articles written, below is a small sample.

1. **Eadie, G**, "2017 Total Solar Eclipse", *Vista*, 41(6), 2017.
2. **Eadie, G**, "Return of the census: Mapping over a billion stars with Gaia", *Vista*, 40(9), 2016.
3. **Eadie, G**, "Observing Saturn and Mars in July", *Vista*, 40(7), 2016.
4. **Eadie, G** and Springford, A, "Neutron Stars and Pulsars", *Vista*, 40(6), 2016.
5. **Eadie, G**, "Nobel Prize goes to Queen's University Physics Professor", *Vista*, 40(1):15, 2016.

Past Appointments

Moore/Sloan, WRF, and DIRAC Postdoctoral Fellow
eScience Institute and Department of Astronomy
 mentors: Mario Juric (Astronomy), Tyler McCormick (Statistics)

Sep 2017 – Jul 2019
University of Washington

Research Assistant (during PhD) <i>Department of Physics & Astronomy</i> Supervisor: William Harris, FRSC	Sep 2013 – Aug 2017 <i>McMaster University</i>
3D Theatre Coordinator <i>Origins Institute</i> Supervisors: Ralph Pudritz and James Wadsley → Supervised, managed, and trained 7 graduate student presenters, co-edited presentation scripts, co-organized premier of <i>MARS: A World on the Edge</i> show	Jan 2015 – Aug 2016 <i>McMaster University</i>
Summer Research Assistant <i>Department of Mathematics & Statistics</i> Supervisor: David J. Thomson, FRSC → Digitization of magnetogram records for a Natural Resources Canada research project	Jul 2013 – Aug 2013 <i>Queen's University</i>
Summer Research Assistant (after BSc) <i>Department of Physics & Astronomy</i> Supervisors: Harvey Richer, FRSC and Kristin Woodley → Extracting point-spread functions for g and i-band images from the Pan-Andromeda Archeological Survey	Jun 2010 – Aug 2010 <i>University of British Columbia</i>

Teaching Experience

Invited Instructor, eScience Advanced Topics in Data Science Seminar <i>eScience Institute</i>	April 2019 <i>University of Washington</i>
Mentoring undergraduate students' ASTR 499 research projects <i>Department of Astronomy</i>	2018 – present <i>University of Washington</i>
Guest Lectures on Bayesian Statistics, ASTR 324 (Invited) <i>Department of Astronomy</i>	May 2018 <i>University of Washington</i>
Intro to Astronomy Lecture, Physics 190 (Invited) <i>Department of Physics</i>	Apr 2018 <i>Simon Fraser University</i>
Guest Lectures on Hierarchical Bayes, ASTR 598 (Invited) <i>Department of Astronomy</i>	Mar 2018 <i>University of Washington</i>
Guest Lecture, Physics Undergraduate Seminar (Phys 201) (Invited) <i>Department of Physics, Simon Fraser University</i>	Oct 2017 <i>Burnaby, BC</i>
Guest Lecture, Integrated Science Course <i>Physics & Astronomy Department</i>	Nov 2016 <i>McMaster University</i>
Guest Lecture, Arts & Science Course 2D06 (Invited) <i>Physics & Astronomy Department</i>	Nov 2016 <i>McMaster University</i>
Teaching Assistant for tutorials and labs <i>Physics & Astronomy Department</i>	Sep 2013 – Apr 2017 <i>McMaster University</i>
Teaching Assistant for tutorials, labs, and marking <i>Physics, Engineering Physics, & Astronomy Department</i>	Sep 2010 – Mar 2013 <i>Queen's University</i>

Presentations

Colloquia.....	
Department of Astronomy & Astrophysics <i>Pennsylvania State University</i>	Feb 2019 <i>State College, PA</i>

Astronomy Department <i>University of Washington</i>	May 2018 Seattle, WA
Physics & Astronomy Department <i>University of British Columbia</i>	Sep 2016 Vancouver, BC
Herzberg Institute for Astrophysics <i>Natural Research Council of Canada</i>	Sep 2016 Saanich, BC
Conferences	
Invited Talk <i>Open Digital Infrastructure in Astrophysics, KITP</i>	Jun 2019 Santa Barbara, CA
Invited Talk <i>Astrostatistics Session, Joint Statistical Meetings</i> Section on Bayesian Statistical Sciences, Astrostatistics Special Interest Group	Aug 2018 Vancouver, BC
Invited Talk <i>Astrostatistics, IMS Annual Meeting on Probability & Statistics</i>	Jul 2018 Vilnius, Lithuania
Invited Talk <i>Joint Research Conference on Statistics in Quality, Industry and Technology</i>	Jun 2018 Sante Fe, NM
Plaskett Prize Lecture <i>CASCA Annual Meeting</i>	May 2018 Victoria, BC
Oral Presentation <i>Northwest Astronomy Teaching Exchange</i>	Sep 2017 Seattle, WA
Two Oral Presentations: Research & Education Talks <i>Canadian Astronomical Society (CASCA) Annual Meeting</i>	Jun 2017 Edmonton, AB
Poster Presentation <i>Conference on the Origin and Evolution of Galaxy Halos</i>	Mar 2017 Pueno Ayrorra, Ecuador
Press Conference (Invited) & Dissertation Talk <i>229th Meeting of the American Astronomical Society</i>	Jan 2017 Grapevine, TX
Contributed Talks <i>Joint Statistical Meetings, American Statistical Association</i>	Jul 2014; Jul 2016 Boston, MA; Chicago, IL
Astrostatistics Invited Talk (2015); Invited Poster (2017) <i>Joint Statistical Meetings, American Statistical Association</i>	Jul 2015; Jul 2017 Seattle, WA; Baltimore, MD
Oral & Poster Presentations <i>Statistical Challenges in Modern Astronomy VI Conference</i>	Jun 2016 Pittsburgh, PA
Oral Presentations <i>CASCA Annual Meetings</i>	Jun 2014; May 2015; May 2016 Quebec, QB; Hamilton, ON; Winnipeg, MB
Poster Presentation <i>Spring Symposium, Space Telescope Science Institute</i>	May 2016 Baltimore, MD
Poster Presentation <i>International Astronomical Union XXIX General Assembly</i>	Aug 2015 Honolulu, HI
Topics in Astrostatistics Seminar (Invited) <i>Harvard University</i>	Mar 2015 Boston (via Skype), MA
Poster Presentation <i>European Space Agency Workshop</i>	Oct 2014 Garching, Germany

Guest Speaker on Public Outreach (Invited) **Aug 2014**
Centre for Research in Astrophysics Quebec *Montreal, QB*

Seminars.....

Community Seminar **May 2019**
eScience Institute *Seattle, WA*

Department of Statistical Sciences **Jan 2019**
University of Toronto *Toronto, ON*

Invited Statistics Seminar **Sep 2018**
Department of Statistics and Actuarial Sciences, Simon Fraser University *Burnaby, BC*

Seminar on Bayesian Statistics **Sep 2018**
DIRAC Institute, Department of Astronomy, UW *Seattle, WA*

Invited Cosmology Seminar **Oct 2017**
Department of Physics, Simon Fraser University *Burnaby, BC*

Astro Lunch Seminar **Dec 2016**
Department of Astronomy, University of Washington *Seattle, WA*

Seminar Talk **Sep 2016**
Department of Physics & Astronomy, University of Victoria *Victoria, BC*

Astronomy Seminar **Jan 2016**
Department of Astronomy, Columbia University *New York, NY*

Invited Astronomy Seminar **Oct 2015**
Department of Physics & Astronomy, University of Waterloo *Waterloo, ON*

Public Speaking.....

Invited Panelist (declined because postdoc began Sep. 1, 2017) **Sep 2017**
Teaching & Learning Forum, MacPherson Institute *McMaster University*

Guest Speaker **Mar 2017**
Monthly meeting of undergraduate club *McMaster Astronomy Club*

Invited Speaker and Panelist **Sep 2016**
Thinklandia Festival *Victoria, BC*

Invited Speaker **Sep 2016**
Science Literacy Week, McMaster Science Café *Hamilton, ON*

Invited Guest Speaker **Jun 2014, Jan 2015**
Royal Astronomical Society of Canada *St. Catherine's, ON*

Guest Speaker **Dec 2011, Jul 2013**
Queen's Observatory Open House *Kingston, ON*

Service & Administrative Duties

Program Chair-Elect **2019–2020**
Astrostatistics Interest Group *American Statistical Association*

Steering Committee Member **Aug 2018 – present**
Working Group on Astroinformatics and Astrostatistics *American Astronomical Society*

at the University of Washington.....
Postdoc representative at department meetings **Apr 2018 – present**
Department of Astronomy *Seattle, WA*

Chair, Visitors Committee **Jul 2018 – present**
DIRAC Institute *Seattle, WA*

at the annual Joint Statistical Meetings (JSM).....

Co-organizer for astrostatistics session **proposal submitted Sep 2019**
“Astronomical(ly) Big Data: how to find and mine astronomy data” *Denver, CO*

Co-organizer for astrostatistics invited session **2017 – 2018**
“Hierarchical Bayes in a Hierarchical Universe” *Vancouver, BC*

Organized Astrostatistics Table **2017 – 2018**
ASA Astrostatistics Interest Group *Vancouver, BC*

SPEED Session Chair **Jul 2017**
Statistical Education Session *Baltimore, MD*

Session Chair **Aug 2016**
Topic-Contributed Session *Chicago, IL*
“Estimating the Properties of Physical Time Series by Leveraging the Power of Spectral Analysis”

at McMaster University.....

Designed Conference Program **May – Jun 2016**
Great Lakes Cosmology Workshop *Hamilton, ON*

President and Executive Committee Member **Sep 2013 – Aug 2017**
Graduate Women in Physics & Astronomy (GWIPA) *McMaster University*

Graduate Student on LOC, Whidden Lecture Series **Feb 2016**
Organized Graduate Student Poster and Q&A Session with speaker *McMaster University*

LOC member, CASCA 2015 Annual Meeting **Sep 2014 – May 2015**
Grad student rep., designed conference program, recruited volunteers *Hamilton, ON*

Chair & Organizer, CASCA 2015 Graduate Student Workshop **May 2015**
Invited guest speaker, recruited volunteers, chaired meetings, delegated tasks *Hamilton, ON*

Graduate Student Representative, Department Meetings **Sep 2011 – Aug 2012**
Department of Physics, Engineering Physics & Astronomy *Queen's University*

Graduate Student Representative, Building & Space Committee **Queen's University**
Department of Physics, Engineering Physics & Astronomy *Sep 2010 – Aug 2011*

Volunteer & Public Outreach Activities

Organizer and Volunteer, Girls in Science Days **2014 – 2017**
GWIPA's annual science workshop for Grade 10 girls *McMaster University*

Volunteer, Let's Talk Science **Apr 2015, Jun 2016**
Activities at McMaster Children's Hospital and “Science of Sports Day” *McMaster University*

Volunteer, Mac Athlete's Care **Mar 2015**
Visit with children *McMaster Children's Hospital*

Telescope Volunteer, McMaster Sidewalk Astronomy **Sep 2014, Apr 2015, May 2016**
“Westfield Heritage Village Victorian Star Party” *Rockton, ON*

Volunteer, Math Quest Camp <i>Guest speaker, led lesson and activities on projectile motion</i>	Aug 2013 <i>Queen's University</i>
Telescope Volunteer, Queen's Observatory Open House <i>Various public outreach events</i>	Sep 2010 - Aug 2013 <i>Queen's University</i>
Volunteer, Starry-Nights @ SFU <i>Observing nights and telescope workshop for school groups</i>	Fall 2009 – Summer 2010 <i>Simon Fraser University</i>
Founder and President, SFU Astronomy Club <i>Organizing club events, funding applications, observing nights</i>	Sept 2008 – Dec 2009 <i>Simon Fraser University</i>

Interviews & Media

1. "McMaster figure skaters depend on #physics to become champions", video produced by Matt Terry and Sarah Jones, **McMaster Daily News**, Feb 17, 2017. (Video collaboration)
2. "Milky Way weighs in light, using a well-worn technique" by Calla Cofield, **Space.com**, Jan. 17, 2017. (Telephone interview)
3. "Absolutely every bit of our Galaxy" by Nicholas Bakalar, **The New York Times**, Jan. 16, 2017. (Telephone interview)
4. "How much does the Milky Way Weigh?" by Michelle Z. Donahue, **National Geographic**, May 31, 2016. (Telephone Interview)
5. "Milky Weigh: our galaxy has the mass of 700bn suns, say scientists" by Tim Radford, **The Guardian**, May 31, 2016. (E-mail Interview)
6. "Ice dancer turned astrophysicist studies Milky Way's mysterious dark matter" by Judi Pattison, **McMaster Daily News**, Sept. 8, 2015. (In-person Interview)

Other Fun Stuff

Masters Elite Pattern Dance Champion <i>International Skating Union Adult Figure Skating Competition</i>	Oct 2018 <i>Vancouver, BC</i>
Most Valuable Player <i>McMaster Varsity Figure Skating Team</i>	Mar 2017 <i>McMaster University</i>
National Champion (Solo) and Silver Medallist (Team) <i>Skate Canada Adult Figure Skating Championships</i>	Apr 2016 <i>Oakville, ON</i>
OUA Gold, Silver, and Bronze medallist <i>Queen's and McMaster Varsity Figure Skating Team</i>	Sep 2010 – Feb 2017 <i>Queen's and McMaster Universities</i>
Volunteer Coach, McMaster Figure Skating Team <i>Pairs, dance, singles, and synchronized skating events</i>	Sep 2013 – Mar 2014 <i>McMaster University</i>
Finalist (top 4), Marion Ross Trophy <i>Female Athlete of the Year</i>	March 2013 <i>Queen's University</i>