

Kelly Lepo

Education and Outreach Scientist
Office of Public Outreach
Space Telescope Science Institute

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Education

- Aug 2008 - June 2015 **University of Toronto**, Toronto, ON
PhD in Astronomy and Astrophysics
A search for supernova type Ia progenitors in the Magellanic Clouds
Advisor: Marten van Kerkwijk
- Sept 2003 - June 2007 **University of Chicago**, Chicago, IL
B.A. with honors in Physics, with a specialization in Astrophysics

Professional Experience

- June 2020 - Present **Education and Outreach Scientist**
Space Telescope Science Institute, Space Telescope Science Institute
Led the development of outreach products for the upcoming James Webb Space Telescope. Helped to create resources and provide science review to support informal learning institutions through NASA's Universe of Learning.
- Sept 2019 - June 2020 **Undergraduate Advisor**
Department of Physics, McGill University
Provided guidance on course selection, navigating bureaucracy, undergraduate research and applying to graduate school.
- May 2018 - June 2020 **Undergraduate Optics Lab Designer**
Department of Physics, McGill University
Designed inquiry-based laboratory activities for an upper-level undergraduate optics course using research-grade optics components, in what was previously a lecture-only course.
- May 2015 - March 2018 **Coordinator**
McGill Space Institute, McGill University
Coordinated education and outreach efforts of the McGill Space Institute, facilitated interdisciplinary collaborations between researchers
- Aug 2014 - May 2015 **Lecturer**
Department of Physics, Gonzaga University

- Aug 2008 - Aug 2014 **Graduate Research Assistant**
 Department of Astronomy and Astrophysics, University of Toronto
 Advisor: Marten van Kerkwijk
- Dec 2012 - Dec 2013 **Research Assistant - Planetarium Education Research Project**
 Department of Astronomy and Astrophysics, University of Toronto
 Advisor: Michael Reid
- June 2007 - June 2008 **Technician**
 CERN, Geneva, Switzerland
 Advisor: Jim Pilcher, University of Chicago
- Sept 2005 - June 2007 **Research Assistant**
 Kavli Institute for Cosmological Physics, University of Chicago
 Advisor: Bruce Winstein

Teaching Experience

- 2018 - 2020 **Lab Designer and Lab Instructor, Optics (PHYS 434)**
 McGill University
Design inquiry-based laboratory activities for an upper-level optics course that was previously entirely lecture-based. Updating existing optics-related experiments to emphasize student-led inquiry, incorporating best practices from education research. Supervised teaching assistants.
- 2014 - 2015 **Instructor, General Physics I, Scientific Physics I (PHYS101, PHYS103)**
 Gonzaga University
Algebra and calculus-based first semester mechanics courses and associated labs, supervised teaching assistants. Increased understanding of key concepts by a larger margin than the four other lecturers teaching the same course, as measured by the Force Concept Inventory (FCI).
- 2013 **Instructor, West African International Summer School for Young Astronomers, Abuja, Nigeria**
Week-long summer school in Astronomy for West African undergraduate science students. Designed inquiry-based activities on measuring distances in the Universe with Type Ia supernovae. Also designed a multi-day activity on the Sun, which incorporated observing sunspots with solar telescopes and hands-on activities demonstrating important physics concepts for stellar structure.
- 2013 - 2014 **Teaching Assistant, The End of the World as We Know It (BIG100), University of Toronto**
A multidisciplinary first-year course on the idea of "Apocalypse," taught by faculty from the Astronomy, Sociology and English Literature Departments.
- Fall 2008, Fall 2010, Fall 2011 **Teaching Assistant, The Sun and Its Neighbours (AST101)**
 University of Toronto
A large (~1300 student) introductory astronomy class for arts students.
- Spring 2011, Summer 2011, Spring 2012, Summer 2013 **Teaching Assistant, Stars and Galaxies (AST201)**
 University of Toronto
A large (~1300 student) introductory astronomy class for arts students.
- Spring 2012, Spring 2011, Spring 2010 **Teaching Assistant, Life on Other Worlds (AST251)**
 University of Toronto
Astrobiology course for science students

Fall 2009 **Teaching Assistant**, Great Moments in Astronomy (AST210)
University of Toronto
Introductory astronomy course for science students

Spring 2009 **Teaching Assistant**, Stars and Galaxies (AST201)
University of Toronto Mississauga
An introductory astronomy class for arts students.

Mentoring Experience

Winter 2021 **Mentor**, Major's Research Project, Department of Physics, McGill University
Informal Educational Videos: Designing Effective Multimedia Techniques in Astrophysics Education,
Student: Lewis Mackay

Winter 2019 **Mentor**, Major's Research Project, Department of Physics, McGill University
Understanding Wavefront Optics through Adaptive Optics: A Senior Undergraduate Laboratory Experiment, Student: Robyn Rugenius

2016 - Present **Organiser**, McGill Space Institute Summer Student Program
Led professional development, science communication workshops for undergraduate summer students

Summer 2016 **Mentor and Admin**, Google Summer of Code, McGill Space Institute
Google-sponsored program for undergraduate students for open source software development projects

Fall 2013 -
Summer 2014 **Mentor**, Fourth Year Undergraduate Research Project
Department of Astronomy and Astrophysics, University of Toronto
Student: Nick Fantin

Spring 2012 Institute for Scientist & Engineer Educators Professional Development Program,
UC Santa Cruz
Developed an inquiry activity for summer undergraduate research students, to teach research skills to help students with their summer research projects. Received in-depth training in designing inquiry-based laboratory activities, the pedagogy of inquiry, and equity and inclusion issues.

Public Outreach

Spring 2021 **Speaker**, *What to expect from the James Webb Space Telescope*,
Public talk
[Night Sky Network](#) (March 2021, ~400 people)
North Houston Astronomy Club (~ 25 people)
Astronomical Society of Long Island (~50 people)

Jan 2017 - June 2020 **Master of Ceremonies / Game Master**, Astronomy on Tap MTL
Short accessible, presentations given in local bars

June 2019 **Speaker**, *Novas, Supernovas and Star Trek*, Public talk (~100 people)
Astronomy on Tap MTL

- May 2018 **Speaker**, *Infinity and Beyond: Stories of imagination, the future, and boundless possibilities*, Science storytelling slam
Confabulation Montreal
Monthly event and bi-monthly podcast that features curated true stories
- July 2016 - March 2018 **Organiser**, AstroMcGill Public AstroNight
Free public talks given by a professional astronomer, usually a McGill student or professor, aimed at a broad audience.
- Jan 2018 **Speaker**, *That's not Tatooniel!: Planets around binary stars*,
Public talk (~100 people)
Astronomy on Tap MTL
- August 2017 **Organiser**, *Solar Eclipse Watch MTL*, Public partial solar eclipse viewing event
(~10,000 people)
McGill University, Lower Field
- August 2017 **Speaker**, *Everything You Need to Know About the Great North American Solar Eclipse*, Public talk (~300 people)
AstroMcGill Public AstroNight
- July 2017 **Speaker**, *No, Planet Nibiru will not kill us all*, Public talk (~100 people)
Astronomy on Tap MTL
- May 2017 **Speaker**, *Tycho, Zwicky and exploding stars: What Supernovas taught us about the Universe*, Public talk (~20 people)
Pint of Science
Part of an international science outreach festival, held in bars
- May 2016, June 2017 **Activity designer and volunteer**, McGill Teacher Inquiry Institute
Led primary school teachers through McGill-designed, hands-on, inquiry-based lesson plans to use in their classrooms. 2016: phases of the Moon. 2017: seasons.
- April 2016 **Speaker**, *Comets: From Harbingers of Doom to the Scientific Revolution*,
Public talk (~300 people)
AstroMcGill Public AstroNight
- 2016 - 2017 **Classroom volunteer and designer**, McGill Space Explorers program
International Astronomical Union Office of Astronomy for Development funded program to send astronomers to grade 4-6 students in underprivileged areas
- Aug 2015 **Speaker**, *Pluto Palooza*, Public talk (~500 people)
AstroMcGill Public AstroNight
Celebrating the New Horizons flyby of Pluto
- March 2014 **Speaker**, *The Harvard Computers: Women who catalogued the stars and helped us understand the Universe*, Public talk (~200 people)
University of Toronto Astro Tours
- Feb 2014 **Speaker**, *The AstroTour Supernova Extravaganza*,
Public Panel Discussion, (~300 people)
University of Toronto Astro Tours

- Dec 2013 **Speaker**, *Comets: Icy Visitors*, Public talk (~200 people)
University of Toronto Astro Tours
- July 2013 **Presenter**, *Welcome to the neighborhood: the nearest stars to the Sun*,
Planetarium Show (~80 people)
University of Toronto Astro Tours
- Dec 2012 **Speaker**, *2012: From Garbled Science to Death from the Skies!*,
Public Talk (~400 people)
University of Toronto Astro Tours
*The astronomy behind 2012 Mayan apocalypse theories, including the solar cycle, the Earth's
magnetic field and the black hole at the center of the milky way.*
- Oct 2012 **Speaker**, *2012: From Garbled Science to Death from the Skies!*
Science Teachers Association of Ontario, invited speaker
- Fall 2012 **Speaker**, *Small stars, big explosions and vast distances: Using supernovae to
understand the Universe*, Public Talk (2 branches, ~20 people per talk)
Toronto public library
- Fall 2011 **Speaker**, *2012: From Garbled Science to Death from the Skies!*
Toronto public library (8 branches, ~20 people per talk)

Media Appearances

- Jan. 2020 *Betelgeuse is unusually faint. Will it explode as a supernova?*
CTV Montreal News, Television
- Jan. 2020 *Just a Fainting Spell? Or Is Betelgeuse About to Blow?*
CBC Daybreak Montreal, Radio
- Jan. 2020 *Aliens definitely exist and they could be living among us on Earth, says Britain's
first astronaut*
CJAD 800 - The Natasha Hall Show, Radio
- Jan. 2019 *Super Full Moon*
CJAD 800 - The Andrew Carter Morning Show, Radio
- Jan. 2019 *CHIME Fast Radio Burst detections*
CJAD 800 - The Natasha Hall Show, Radio
- Dec. 2018 *Geminid Meteor Shower*
CJAD 800 - The Andrew Carter Morning Show, Radio
- Sep. 2018 *Breakthrough Listen discovers new Fast Radio Bursts*
CJAD 800 - The Natasha Hall Show, Radio

July 2018	<i>How to see Mars at its closest approach</i> Radio: CJAD 800 - The Natasha Hall Show, CBC Daybreak Montreal Television: CTV Montreal News
Feb 2018	<i>Unveiling the mystery behind the "Super Blue Blood Moon"</i> The McGill Tribune, Print
Jan. 2018	<i>Super Blood Moon (Lunar Eclipse)</i> CBC Daybreak Montreal, Radio CBC News, Print
Dec. 2017	<i>Pentagon's UFO program (probably not aliens)</i> CJAD 800 - The Natasha Hall Show, Radio
Nov. 2017	<i>Newly Discovered Plant Ross 128b: The closest temperate planet to Earth</i> CJAD 800 - The Natasha Hall Show, Radio
Oct. 2017	<i>Asteroid 2012 TC4 flies by of Earth</i> CJAD 800 -The Natasha Hall Show, Radio
Sept. 2017	<i>Tempête solaire en vue (Solar Storm In Sight)</i> <i>La Presse, Print</i>
Aug. 2017	2017 Partial Solar Eclipse <i>Print:</i> Montreal Gazette, McGill Reporter <i>Television:</i> Global News (National), CTV News, CBC News <i>Radio:</i> CJAD 800 - The Natasha Hall Show, CBC Radio Noon Montreal, CBC Daybreak Radio
April 2017	<i>NASA captures images of large asteroid set to fly by Earth</i> CJAD 800 - The Natasha Hall Show, Radio
Nov. 2016	<i>Supermoon not so super after all</i> CBC News Montreal, Television
Aug. 2016	<i>Perseid meteor shower</i> CBC Daybreak Montreal, Radio
Dec. 2015	<i>Geminid meteor shower: How to catch the cosmic light show</i> CBC Daybreak Montreal, Radio
Sept. 2015	<i>Super Blood Moon (Lunar Eclipse)</i> CBC Daybreak Montreal, Radio
July 2015	<i>The discovery of Kepler 452b — an Earth-like planet around a Sun-like Star</i> CBC Daybreak Montreal, Radio
June 2015	<i>The Science Behind the Leap Second</i> CBC News Montreal, Television

Feb. 2014	InnerSpace <i>An entertainment talk show on the Canadian Space network</i>
Dec. 2012	The 2012 Mayan Apocalypse <i>Print:</i> UofT News, the Toronto Star, The Grid TO <i>Television:</i> CBC News Toronto, Global TV Toronto, Omni News, Al Jazeera English <i>Radio:</i> Newstalk 1010 Toronto, Newstalk 1290 London, Ontario

Professional Service

2019- 2020	Co-Chair , Maunakea Spectroscopic Explorer (MSE) Education and Public Outreach (EPO) Working Group
2019	Member , Canadian Astronomical Society (CASCA) Annual General Meeting - Montreal 2019: Local Organizing Committee and Science Organizing Committee
2017 - 2020	Member , Canadian Astronomical Society (CASCA) Outreach committee Chair of the social media sub-committee, Contributed to the Future of Education and Public Outreach white paper for the CASCA 2020 Long Range Plan
2016 - 2017	Chair , AstroMcGill Steering Committee
2016- 2017	Organiser , McGill Space Institute Lunch talk series <i>Two informal, internal presentations by MSI members on their research, given every other week</i>
2015 - 2017	Chair , McGill Space Institute Seminar Committee
2015 - 2017	Organiser , McGill Space Institute Education, Public Outreach and Diversity Discussion <i>Weekly discussion group on a variety of topics related to Diversity and Inclusion, education research and improving public outreach</i>
Nov. 2016	Member , Organizing committee, Frontiers: Cosmos, Curiosity, Creativity - Centre for Research on Religion (CREOR) 2016 conference An interdisciplinary conference with McGill's School of Religious Studies on how cosmologies inform culture and vice versa
2011-2012	President , Graduate Astronomy Students Association (GASA) <i>University of Toronto</i> Referee , <i>Nature</i>

Awards

2014	Fieldus Award <i>Department of Astronomy and Astrophysics, University of Toronto</i> Awarded to one graduate student per year for excellence in leadership, teaching and research.
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Publications

Canadian Long Range Plan 2020: CASCA's Epo Committee White Paper: Proposed National Epo Projects For CASCA

P. Langill, F. Baron, J. Bolduc-Duval, P. Chastenay, M. Chen, R. Cockcroft, **K. Lepo**, S. Morsink, L. Nelson, N. Ouellette, N. van der Marel

Increasing Engagement and Understanding Using Interactive Planetarium Shows, M. Reid, M. Williams, J. Percy, D. Hoeg, **K. Lepo**, J. Nazir, & G. Paciga, (2014). *The Role of New Planetariums in Promoting Engagement and Learning*. Toronto: Higher Education Quality Council of Ontario.

A search for rapidly accreting white dwarfs in the Small Magellanic Cloud, **K. Lepo**, M.H. van Kerkwijk, 2013, *ApJ*, 771, 13

Ultra-soft sources as supernova type Ia progenitors, **K. Lepo**, M.H. van Kerkwijk, *Proceedings of IAU Symp. 281, Binary Paths to Type Ia Supernovae Explosions*, 2011, arXiv: 109.4394

Skills

Language	English: Native Speaker French: Intermediate Spanish: Intermediate
Astronomy	Experience working with spectroscopic and photometric data at X-ray, UV, optical and IR wavelengths. Used astronomical pipelines to reduce data. Spectroscopically classified about 1000 stars by eye and identified emission and absorption lines in their spectra.
Programming Languages	Familiar with Unix and Linux based operating systems, Python, Fortran, C++, IDL, HTML and Mathematica. Wrote original code and modified existing software.
Graphic Design	Proficient in the Adobe Suite, including InDesign, Illustrator, Photoshop and Dreamweaver. Designed posters, flyers and reports, including the McGill Space Institute Annual Report.
Social Media	Managed the Twitter and Facebook accounts for: The McGill Space Institute, AstroMcGill, the Canadian Astronomical Association (CASCA)
Communication	Strong science communication skills, experience with education and public outreach efforts, using astronomy in international development efforts, discussing scientific results with television and print media.