

# SAMANTHA M. LAWLER

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## RESEARCH

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### EDUCATION

<b>University of British Columbia</b> Ph.D. in Astronomy	Vancouver, BC Sep. 2009-Aug. 2013
<b>Wesleyan University</b> M.A. in Astronomy	Middletown, CT, USA Sep. 2007-Jun. 2009
<b>California Institute of Technology</b> B.S. in Astrophysics	Pasadena, CA, USA Sep. 2001-Jun. 2005

### RESEARCH EMPLOYMENT

<b>Campion College</b> <i>Assistant Professor</i>	Regina, SK Jul. 2019-present
<b>NRC-Herzberg</b> <i>Plaskett Fellow</i>	Victoria, BC Jun. 2015-Jun. 2019
<b>University of Victoria</b> <i>Sessional Lecturer</i>	Victoria, BC spring 2015, 2018, & 2019
<b>University of Victoria/NRC-Herzberg</b> <i>Postdoctoral Fellow</i>	Victoria, BC Oct. 2013-Jan. 2015
<b>University of British Columbia</b> <i>Research Assistant</i>	Vancouver, BC Sep. 2009-Aug. 2013
<b>Wesleyan University</b> <i>Research Assistant</i>	Middletown, CT, USA Sep. 2007-Jun. 2009
<b>California Institute of Technology/NASA-Jet Propulsion Laboratory</b> <i>Research Technician – full-time summer, part-time during school year</i>	Pasadena, CA, USA Jun. 2002-Jul. 2007

### RESEARCH GRANTS AND TELESCOPE TIME ALLOCATIONS

Canada-France-Hawaii Telescope Large Program co-PI: 250 hours over 2 years	2022-24
NSERC Discovery Grant (PI: Lawler) \$120,000 over 5 years	2020-26
NSERC Discovery Launch Supplement (PI: Lawler) one time top-up of \$12,000	2020-26
NASA ROSES Grant co-I (PI: R. Pike) \$460,000 (USD) over 3 years	2021-23
Campion President's Research Fund \$1,500 over 1 year	2022-23
Campion President's Research Fund \$2,000 over 1 year	2020-21
Canada-France-Hawaii Telescope queue program PI: 67 hours over 3 years	2020-2022
Gemini Observatory queue program PI: 10 hours over 1 year	2019-2020
ALMA Observatory queue program PI: 4 hours	2014
Canada-France-Hawaii Telescope queue program PI: 2 hours over 2 years	2010-2011

### RESEARCH COLLABORATION MEMBERSHIP

CLASSY Survey Collaboration. CFHT, Kuiper Belt, co-PI.	2022-present
LIDO Survey Collaboration. CFHT, Kuiper Belt, co-PI.	2019-present
FOSSIL Survey Collaboration. Subaru Observatory, Kuiper Belt.	2018-present

GPIES Survey. Gemini Observatory, exoplanets.	2014-2019
OSSOS Survey Collaboration. CFHT, Kuiper Belt.	2013-present
DEBRIS Survey. Herschel Space Telescope, debris disks.	2010-2015
SCUBA-2 Observations of Nearby Stars (SONS). JCMT, debris disks.	2010-2015
Canada-France Ecliptic Plane Survey (CFEPS). CFHT, Kuiper Belt.	2009-2013

#### FELLOWSHIPS, SCHOLARSHIPS, AND HONOURS

Asteroid 1999 RB <sub>221</sub> officially named (42910) Samanthalawler by IAU	2021
National Research Council "Instant" Award	2019
NRC-Canada Plaskett Fellowship	2015
CITA National Fellowship (declined)	2015
Plot featured on the cover of the Astronomical Journal	July 2013
Four Year Fellowship, University of British Columbia	2009-2013
Pacific Century Graduate Scholarship, Province of British Columbia	2010-2011
Milton & Jane Mohr Scholarship, California Institute of Technology	2003-2005
Alcorn Scholarship, California Institute of Technology	2001-2003

#### SUPERVISION OF HIGHLY QUALIFIED PERSONNEL

**red** = former/current Campion student, **green** = former/current U of Regina student

##### Graduate

- **Lowell Peltier**: Uvic Astronomy, co-supervising PhD project. F20-present  
*Constraining the population of very distant TNOs in the outer Kuiper Belt*  
I previously supervised him as a Campion research assistant. W20-S20  
*Updating the Python wrapper for the OSSOS Survey Simulator*
- **Rosemary Dorsey**: U. of Canterbury, New Zealand, co-supervising PhD project. W21-present  
*The Bayesian Inference Engine for LSST*
- **Mark Comte**: U of Regina physics, supervising research assistantship. W21-present  
*Developing code for Kozai Plutino resonance diagnosis*

##### Undergraduate

- **Cameron Semenchuck**: Uvic Astro BSc student, supervising summer research. S22-present  
*CLASSY and LIDO survey bias simulations*
- **Erinn Psajd**: Kwantlen Polytechnic U. physics, supervised honours BSc project. F21-W22  
*The effects of megaconstellations on astronomical observing*
- **Breanna Cromptvoets**: Campion physics, supervised honours BSc project. F20-S21  
*Debiasing the distant resonant populations with OSSOS - published!*
- **Emily Crumley**: Campion research assistant. W22  
*Vetting TNO discoveries in CFHT and Magellan data*  
I previously supervised her as Campion President's Fund research ass't F20-S21  
*Cataloguing equipment in the Astronomy Teaching Laboratory*
- **Mriana Yadkoo**: U of Regina mathematics/computer science, supervised co-op. F20  
*Diagnosing resonance in N-body simulations of TNOs*
- **Abdelrahman Rabaa**: U of Regina software engineering, supervised co-op. F20  
*N-body simulations of resonant TNOs*
- **Fletcher Waller**: Uvic Astronomy BSc, supervised NRC co-op. S18  
*N-body simulations of the Fomalhaut System (co-supervised with JJ Kavelaars)*

##### Student Committee Work

- **Luan Koerich**: U of Regina physics, PhD committee member W20-present
- **Mark Comte**: U of Regina Physics MSc committee member W20-W21
- **Danae Suchan**: U of Regina Biology MSc defense chair Aug. 21
- **Naran Chirakkal Ruckiya Sinorina**: U of Regina CS MSc external examiner Aug. 20

#### INVITED CONFERENCE LECTURES

total: 6

##### **Planetary system construction and remodelling: Insights from the Kuiper Belt**

Invited review talk, CASCA 2022, Waterloo, ON (remote). 17 May 2022.

##### **Megaconstellations are going to ruin stargazing for everyone (and what you can do about it)**

Keynote, Father Lucian Campbell Lecture Speaker

Saskatchewan Summer Star Party, Royal Astronomical Society of Canada, Cypress Hills, SK. 6 August 2021.

##### **Planet 9 or Planet Nein? Discoveries in the Outer Solar System**

Selected for the Canadian Association of Physicists Lecture Tour, 16 February 2021 (remote).

**Science Cases for a Deep Kuiper Belt Survey with Subaru**

Invited review talk: *Subaru Workshop on Small Solar System Bodies*, Kobe, Japan. 19 November 2018.

**The Architecture of Planetary Systems**

Invited review talk, *CASCA 2018*, Victoria, BC. 24 May 2018.

**The Structure of the Kuiper Belt from Observations and Simulations**

Invited review talk: *Bashfest Symposium*, University of Texas at Austin, Austin, TX, USA. 24 October 2017.

INVITED UNIVERSITY COLLOQUIUM LECTURES

total: 21

**Megaconstellations of Satellites are About to Ruin the Night Sky for Everyone**

Department of Physics, University of Winnipeg, Winnipeg, MB. 25 Mar 2022 (remote).

**Megaconstellations of Satellites are About to Ruin the Night Sky for Everyone**

Dominion Radio Astrophysical Observatory, NRC, Penticton, BC. 9 Feb 2022 (remote).

**Megaconstellations of Satellites are About to Ruin the Night Sky for Everyone**

Dept. of Physics & Astronomy, University of Lethbridge, Lethbridge, AB. 18 Jan 2022 (remote).

**Megaconstellations of Satellites are About to Ruin the Night Sky for Everyone**

Dept. of Physics & Astronomy, University of Alberta, Edmonton, AB. 14 Jan 2022 (remote).

**Megaconstellations of Satellites are About to Ruin the Night Sky for Everyone**

Dept. of Physics, Engineering Physics, & Astronomy, Queen's University, Kingston, ON. 22 Oct. 2021 (remote).

**Megaconstellations of Satellites are About to Ruin the Night Sky for Everyone**

Department of Physics, University of Michigan, Ann Arbor, MI, USA. 8 Sep. 2021 (remote).

**Planet 9 or Planet Nein? Discoveries and Dynamics in the Outer Solar System**

Center for Cosmology and Particle Physics, New York University, New York, NY, USA. 13 Apr. 2021 (remote).

**Planet 9 or Planet Nein? Discoveries in the Outer Solar System**

Dept. of Physics colloquium, Mississippi State University, Starkville, MS, USA. 30 Oct. 2020 (remote).

**Planet 9 or Planet Nein? Discoveries in the Outer Solar System**

Dept. of Physics colloquium, San Francisco State University, San Francisco, CA, USA. 19 Oct. 2020 (remote).

**Planet 9 or Planet Nein? Discoveries in the Outer Solar System**

University of Regina Physics Department colloquium, Regina, SK. 22 November 2019.

**Discoveries in the Outer Solar System: Don't Count Your Planets Before They Hatch**

NRC-Herzberg Astronomy Colloquium, Victoria, BC. 5 March 2019.

**How to Build a Planetary System**

Special Astronomy Colloquium, Campion College, University of Regina. Regina, SK. 5 February 2019.

**Planet 9 or Planet Nein? The Architecture of the Outer Solar System**

McGill Space Institute seminar, McGill University, Montreal, QC. 4 December 2018.

**Planet 9 or Planet Nein? The Architecture of the Outer Solar System**

Physics department seminar, Bishop's University, Sherbrooke, QC. 3 December 2018.

**Understanding the Architecture of Planetary Systems**

Astronomy colloquium, NRC-Dominion Radio Astrophysical Observatory, Penticton, BC. 15 November 2017.

**Understanding the Architecture of Planetary Systems**

Department of Astronomy and Physics colloquium: Saint Mary's University. Halifax, NS. 14 March 2017.

**Does Our Solar System Need to Have Another Planet?**

ASIAA-NTU joint colloquium: Academia Sinica, Taipei, Taiwan. 1 March 2017.

**Fomalhaut b is Probably Not a Planet**

Small Scale Seminar: Harvard Center for Astrophysics, Cambridge, MA, USA. 19 October 2015.

**Fomalhaut b as a Dust Cloud: Frequent Collisions within the Fomalhaut Debris Disk**  
Department of Astronomy colloquium: University of Washington, Seattle, WA, USA. 30 April 2015.

**Fomalhaut b as a Dust Cloud: Frequent Collisions within the Fomalhaut Debris Disk**  
Department of Astronomy colloquium: University of Toronto, Toronto, ON. 26 September 2014.

**What on Earth is Fomalhaut b?**  
Department of Physics and Astronomy seminar: University of Victoria, Victoria, BC. 25 June 2014.

**What on Earth is Fomalhaut b?**  
Astronomy colloquium: NRC-Herzberg, Victoria, BC. 25 March 2014.

FIRST- AND SECOND-AUTHOR REFEREED PUBLICATIONS total: 19

See <https://uregina.ca/~slb861/pub.html> for a list with links to published articles

**OSSOS XXV: The Populations and Orbital Distributions of the Distant Resonant TNOs**  
**Crompvoets B, Lawler S**, Volk K, Chen Y, Gladman B, **Peltier L**, Alexandersen M, Bannister M, Gwyn S, Kavelaars J, Petit J.

2022 – *The Planetary Science Journal* 3:113 (14 pg)

**Visibility Predictions for Near-Future Satellite Megaconstellations: Latitudes near 50 Degrees will Experience the Worst Light Pollution**

**Lawler S**, Boley A, & Rein H

2022 – *The Astronomical Journal* 163:21 (14 pg)

**A Study of the High-Inclination Population in the Kuiper Belt – III. The 4:7 Mean Motion Resonance**

Li J, **Lawler S**, Zhou L-Y, & Sun Y-S

2020 – *Monthly Notices of the Royal Astronomical Society*, 492:3566 (14 pg)

**Perspectives on the Distribution of Orbits of Distant Trans-Neptunian Objects**

Kavelaars J, **Lawler S**, Bannister M, & Shankman C

2019 – Chapter for *The Transneptunian Solar System* (D. Prialnik, A. Barucchi, L. Young, Eds.) (17 pg)

**OSSOS: XIII. Fossilized Resonant Dropouts Tentatively Show Neptune's Migration was Grainy and Slow**

**Lawler S**, Pike R, Kaib N, Alexandersen A, Bannister M, Gladman B, Gwyn S, Kavelaars J, Petit J, & Volk K

2019 – *The Astronomical Journal*, 157:253 (14 pg)

**OSSOS: X. How to Use a Survey Simulator: Statistical Testing of Dynamical Models Against the Real Kuiper Belt**

**Lawler S**, Kavelaars J, Alexandersen A, Bannister M, Gladman B, Petit J, & Shankman C

2018 – *Frontiers in Astronomy and Space Sciences* 5:14 (12 pg)

**OSSOS VIII: The Transition Between Two Size Distribution Slopes in the Scattering Disk**

**Lawler S**, Shankman C, Kavelaars J, Alexandersen A, Bannister M, Chen Y, Gladman B, Gwyn S, Kaib N, Petit J, Volk K

2018 – *The Astronomical Journal*, 155:197 (9 pg)

**Details of Resonant Structures within a Nice Model Kuiper Belt: Predictions for High-Perihelion TNO Detections**

Pike R & **Lawler S**.

2017 – *The Astronomical Journal*, 154:171 (12 pg)

**The Structure of the Distant Kuiper Belt in a Nice Model Scenario**

Pike R, **Lawler S**, Brasser R, Shankman C, Alexandersen M, & Kavelaars J.

2017 – *The Astronomical Journal*, 153:127 (10 pg)

**Observational Signatures of a Massive Distant Planet on the Scattering Disk**

**Lawler S**, Shankman C, Kaib N, Bannister M, Gladman B, & Kavelaars J.

2017 – *The Astronomical Journal*, 153:33 (7 pg)

**ALMA Observations of the Debris Disk of Solar Analog  $\tau$  Ceti**

MacGregor M, **Lawler S**, Wilner D, Matthews B, Kennedy G, Booth M, & Di Francesco J.  
2016 – *The Astrophysical Journal*, 828:113 (8 pg)

#### Searching for the HR 8799 Debris Disk with *HST*/STIS

Gerard B, **Lawler S**, Marois C, Tannock M, Matthews B, & Venn K.  
2016 – *The Astrophysical Journal*, 823:149 (10 pg)

#### Fomalhaut b as a Dust Cloud: Frequent Collisions in the Fomalhaut Disk

**Lawler S**, Greenstreet S & Gladman B.  
2015 – *The Astrophysical Journal Letters*, 802:L20 (5 pg)

#### The Debris Disk of Solar Analogue $\tau$ Ceti: *Herschel* Observations and Dynamical Simulations of the Proposed Multiplanet System

**Lawler S**, Di Francesco J, Kennedy G, Sibthorpe B, Booth M, Vandenbussche B, Matthews B, Holland B, Greaves J, Wilner D, Tuomi M, Blommaert J, de Vries B, Dominik C, Fridlund M, Gear W, Heras A, Ivison R, & Olofsson G.  
2014 – *Monthly Notices of the Royal Astronomical Society*, 444:2665 (11 pg)

#### Plutino Detection Biases, Including the Kozai Resonance

**Lawler S** & Gladman B.  
2013 – *The Astronomical Journal*, 146:6 (13 pg)

#### The Resonant Trans-Neptunian Populations

Gladman B, **Lawler S**, Petit J, Kavelaars J, Jones R, Parker J, Van Laerhoven C, Nicholson P, Rousselot P, Bieryla A, Murray I, & Ashby M.  
2012 – *The Astronomical Journal*, 144:23 (24 pg)

#### Debris Disks in *Kepler* Exoplanet Systems

**Lawler S** & Gladman B.  
2012 – *The Astrophysical Journal*, 752:53 (11 pg)

#### Gas Absorption in the KH 15D System: Further Evidence for Dust Settling in the Circumbinary Disk

**Lawler S**, Herbst W, Redfield S, Hamilton C, Johns-Krull C, Winn J, Johnson J, & Mundt R.  
2010 – *The Astrophysical Journal*, 711:1297 (9 pg)

#### Explorations Beyond the Snow Line: *Spitzer*/IRS Spectra of Debris Disks Around Solar-Type Stars

**Lawler S**, Beichman C, Bryden G, Ciardi D, Tanner A, Stapelfeldt K, Lisse C, & Harker D .  
2009 – *The Astrophysical Journal*, 705:89 (23 pg)

CONTRIBUTING AUTHOR REFEREED PUBLICATIONS      total: 28

#### Plaskett 1.8 metre Observations of Starlink Satellites

Boley A, Wright E, **Lawler S**, Hickson P, & Balam D  
2022 – *The Astronomical Journal* 163:199 (7 pg)

#### The case for space environmentalism

Lawrence A, Rawls M, Jah M, Boley A, Di Vruno F, Garrinton S, Kramer M, **Lawler S**, Lowenthal J, McDowell J, & McCaughrean M  
2022 – *Nature Astronomy* 6:428 (8 pg)

#### FOSSIL. II. The Rotation Periods of Small-sized Hilda Asteroids

Chang C-K, Chen Y-T, Fraser W, Lehner M, Wang S-Y, Alexandersen A, Choi Y-J, Granados Contreras A, Ito T, JeongAhn Y, Ji J, Kavelaars J, Kim M-J, **Lawler S** (+14 additional authors)  
2022 – *The Astrophysical Journal Supplement* 259:7 (8 pg)

#### FOSSIL: I. The Spin Rate Limit of Jupiter Trojans

Chang C-K, Chen Y-T, Fraser W, Yoshida F, Lehner M, Wang S-Y, Kavelaars J, Pike R, Alexandersen A, Ito T, Choi Y-J, Granados Contreras A, JeongAhn Y, Ji J, Kim M-J, **Lawler S** (+ 12 additional authors)  
2021 – *The Planetary Science Journal* 2:191 (10 pg)

#### OSSOS. XXI. Collision Probabilities in the Edgeworth-Kuiper Belt

Abedin A, Kavelaars J, Greenstreet S, Petit J, Gladman B, **Lawler S**, Bannister M, Alexandersen M, Chen Y, Gwyn S & Volk K  
2021 – *The Astronomical Journal* 161:195 (13 pg)

#### **ALMA imaging of the M-dwarf Fomalhaut C's debris disc**

Cronin-Coltsmann P, Kennedy G, Kalas P, Milli J, Clarke C, Duchene G, Greaves J, **Lawler S**, Lestrade J, Matthews B, Shannon A & Wyatt M  
2021 – *Monthly Notices of the Royal Astronomical Society* 504:4510 (14 pg)

#### **OSSOS: The Bimodal Eccentricity and Inclination Distributions of the Stable Neptunian Trojans**

Lin H, Chen Y, Volk K, Gladman B, Murray-Clay R, Alexandersen M, Bannister M, **Lawler S**, Ip W, Lykawka P, Kavelaars J, Gwyn S & Petit J.  
2020 – *Icarus* 361 (10 pg)

#### **OSSOS XVIII: Constraining Migration Models with the 2:1 Resonance Using the Outer Solar System Origins Survey**

Chen Y, Gladman B, Volk K, Murray-Clay R, Lehner M, Kavelaars J, Wang S, Lin H, Lykawka P, Alexandersen M, Bannister M, Chen Y, Gwyn S, **Lawler S** & Petit J.  
2019 – *The Astronomical Journal* 158:214 (17 pg)

#### **OSSOS XV: Probing the Distant Solar System with Observed Scattering TNOs**

Kaib N, Pike R, **Lawler S**, Kovalik M, Brown C, Alexandersen M, Bannister M, Gladman B, & Petit J.  
2019 – *The Astronomical Journal*, 158:43 (16 pg)

#### **OSSOS IX: Two Objects in Neptune's 9:1 Resonance—Implications for Resonance Sticking in the Scattering Population**

Volk K, Murray-Clay M, Gladman B, **Lawler S**, Yu T, Alexandersen M, Bannister M, Chen Y, Dawson R, Greenstreet S, Gwyn S, Kavelaars J, Lin H, Lykawka P & Petit J.  
2018 – *The Astronomical Journal*, 155:260 (9 pg)

#### **OSSOS. VII. 800+ Trans-Neptunian Objects—The Complete Data Release**

Bannister M, Gladman J, Kavelaars J, Petit J, Volk K, Chen Y, Alexandersen M, Gwyn S, Delsanti A, Fraser W, Granvik M, Jakubik M, Kaib N, **Lawler S**, Marsset M, Pike R, Shankman C, Thirouin A, & Vernazza P.  
2018 – *The Astrophysical Journal Supplement Series*, 236:18 (19 pg)

#### **SONS: The JCMT Legacy Survey of Debris Disks in the Submillimetre**

Holland W, Matthews B, Kennedy G, Greaves J, Wyatt M, Booth M, Bastien P, Bryden G, Butner H, Chen C, Chrysostomou A, Davies C, Dent W, Di Francesco J, Duchene G, Gibb A, Friberg P, Ivison R, Jenness T, Kavelaars J, **Lawler S** (+14 additional authors)  
2017 – *Monthly Notices of the Royal Astronomical Society*, 470:3606 (61 pg)

#### **OSSOS VI: Striking Biases in the Detection of Large Semimajor Axis Trans-Neptunian Objects**

Shankman C, Kavelaars J, Bannister M, Gladman B, **Lawler S**, Chen Y, Jakubik M, Kaib N, Alexandersen M, Gwyn S, Petit J, & Volk K.  
2017 – *The Astronomical Journal*, 154:50 (8 pg)

#### **The Canada-France Ecliptic Plane Survey (CFEPS)-High Latitude Component**

Petit J, Kavelaars J, Jones R, Parker J, Van Laerhoven C, Pike R, Nicholson P, Bieryla A, Ashby M, & **Lawler S**.  
2017 – *The Astronomical Journal*, 153:236 (11 pg)

#### **Consequences of a Distant Massive Planet on the Large Semimajor Axis Trans-Neptunian Objects**

Shankman C, Kavelaars J, **Lawler S**, Gladman B, & Bannister M.  
2017 – *The Astronomical Journal*, 153:63 (9 pg)

#### **OSSOS: IV. Discovery of a Dwarf Planet Candidate in the 9:2 Resonance**

Bannister M, Alexandersen M, Bennechi S, Chen Y, Delsanti A, Fraser W, Gladman B, Granvik M, Grundy W, Guilbert-Lepoutre A, Gwyn S, Ip W, Jakubik M, Jones L, Kaib N, Kavelaars J, Lacerda P, **Lawler S** (+17 additional authors)  
2016 – *The Astronomical Journal*, 152:6 (8 pg)

#### **The Outer Solar System Origins Survey: I. Design and First-Quarter Discoveries**

Bannister M, Kavelaars J, Petit J, Gladman B, Gwyn S, Chen Y, Volk K, Alexandersen M, Bennechi S, Bianco F, Delsanti A, Fraser W, Granvik M, Grundy W, Guilbert-Lepoutre A, Gullbis A, Hestroffer D, Ip W, Jakubik M,

Jones L, Kaib N, Lacerda P, **Lawler S** (+17 additional authors).  
2016 – *The Astronomical Journal*, 152:3 (25 pg)

### OSSOS III: Resonant Trans-Neptunian Populations: Constraints from the First Quarter of the Outer Solar System Origins Survey

Volk K, Murray-Clay R, Gladman B, **Lawler S**, (+9 additional authors)  
2016 – *The Astronomical Journal*, 152:23 (25 pg)

### Direct Imaging of an Asymmetric Debris Disk in the HD 106906 Planetary System

Kalas P, Rajan A, Wang J, Millar-Blanchaer M, Duchene G, Chen C, Fitzgerald M, Dong R, Graham J, Patience J, Macintosh B, Murray-Clay R, Matthews B, Rameau R, Marois C, Chilcote J, De Rosa R, Doyon R, Draper Z, **Lawler S** (+36 additional authors).  
2015 – *The Astrophysical Journal*, 814:32 (12 pg)

### The Debris Disk Around $\gamma$ Doradus Resolved with *Herschel*

Broekhoven-Fiene H, Matthews B, Kennedy G, Booth M, Sibthorpe B, **Lawler S**, Kavelaars J, Wyatt M, Qi C, Koning A, Su K, Rieke G, Wilner D, & Greaves J.  
2013 – *The Astrophysical Journal*, 762:52 (11 pg)

### Herschel Imaging of 61 Vir: Implications for the Prevalence of Debris in Low-Mass Planetary Systems

Wyatt M, Kennedy G, Sibthorpe B, Moro-Martín A, Lestrade J, Ivison R, Matthews B, Udry S, Greaves J, Kalas P, **Lawler S**, Su K, Rieke G, Booth M, Bryden G, Horner J, Kavelaars J, & Wilner D.  
2012 – *Monthly Notices of the Royal Astronomical Society*, 424:1206 (18 pg)

### Locating Planetesimal Belts in the Multiple-planet Systems HD 128311, HD 202206, HD 82943, and HR 8799

Moro-Martín A, Malhotra R, Bryden G, Rieke G, Su K, Beichman C, & **Lawler S**.  
2010 – *The Astrophysical Journal*, 717:1123 (17 pg)

### Planets and Debris Disks: Results from a *Spitzer*/MIPS Search for Infrared Excess

Bryden G, Beichman C, Carpenter J, Rieke G, Stapelfeldt K, Werner M, Tanner A, **Lawler S**, Wyatt M, Trilling D, Su K, Blaylock M, & Stansberry J.  
2009 – *The Astrophysical Journal*, 705:1226 (11 pg)

### Survey of Nearby FGK Stars at 160 $\mu\text{m}$ with *Spitzer*

Tanner A, Beichman C, Bryden G, Lisse C, & **Lawler S**.  
2009 – *The Astrophysical Journal*, 704:109 (8 pg)

### The Mid-Infrared Spectrum of the Transiting Exoplanet HD 209458b

Swain M, Bouwman J, Akeson R, **Lawler S**, & Beichman C.  
2008 – *The Astrophysical Journal*, 674:482 (16 pg)

### New Debris Disks Around Nearby Main Sequence Stars: Impact on the Direct Detection of Planets

Beichman C, Bryden G, Stapelfeldt K, Gautier T, Grogan K, Shao M, Velusamy T, **Lawler S**, Blaylock M, Rieke G, Lunine J, Fischer D, Marcy G, Greaves J, Wyatt M, Holland W, & Dent W.  
2006 – *The Astrophysical Journal*, 652:1674 (20 pg)

### IRS Spectra of Solar-Type Stars: A Search for Asteroid Belt Analogs

Beichman C, Tanner A, Bryden G, Stapelfeldt K, Werner M, Rieke G, Trilling D, **Lawler S**, & Gautier T.  
2006 – *The Astrophysical Journal*, 639:1166 (11 pg)

### Frequency of Debris Disks around Solar-Type Stars: First Results from a *Spitzer* MIPS Survey

Bryden G, Beichman C, Trilling D, Rieke G, Holmes E, **Lawler S**, Stapelfeldt K, Werner M, Gautier T, Blaylock M, Gordon K, Stansberry J, & Su K.

2006 – *The Astrophysical Journal*, 636:1098 (16 pg)

## CONFERENCE PROCEEDINGS AND WHITE PAPERS

total: 12, first author: 4

### SATCON2 Observations Working Group Report

Rawls M, Barron D, Birdwell I, Cirkovic E, Deck T, Di Vruno F, Gokhale V, Goodman M, Kafka S, Kebe F, Knox D, Krantz H, Kruk S, **Lawler S**, Monet D, Peel M, Tregloan-Reed J, Zamora O, Allen L, Walker C, Hall J

2021 – *Conference proceedings and mitigation recommendations*

### **Dark & Quiet Skies II**

Walker C (+97 additional authors, including **Lawler S**)

2021 – *Conference proceedings and mitigation recommendations*

### **Report on Megaconstellations to the Canadian Government and the Canadian Space Agency**

Boley A & **Lawler S**

2021 – *A response to the CSA's call for input on the future of Canadian space exploration, arXiv 2104.05733*

### **Planetary Astronomy – Understanding the Origin of the Solar System**

**Lawler S**, Boley A, Connors M, Fraser W, Gladman B, Johnson C, Kavelaars J, Osinski G, Philpott L, Rowe J, Wiegert P, & Winslow R.

2019 – *White Paper for the Canadian Astronomy Long Range Plan 2020, arXiv 1910.13480*

### **Indigenizing the Next Decade of Astronomy in Canada**

Neilson H, Rousseau-Nepton L, **Lawler S**, Spekkens K

2019 – *White Paper for the Canadian Astronomy Long Range Plan 2020, arXiv 1910.02976*

### **Canadian Astronomy on Maunakea: On Respecting Indigenous Rights**

Neilson H, **Lawler S**

2019 – *White Paper for the Canadian Astronomy Long Range Plan 2020, arXiv 1910.02976*

### **Opportunities and Outcomes for Postdocs in Canada**

Ngo H, Kirk H, Brown T, Woods T, Eadie G, **Lawler S**, Spencer L

2019 – *White Paper for the Canadian Astronomy Long Range Plan 2020, arXiv 1911.10320*

### **LRP2020: Astrostatistics in Canada**

Eadie G, Bahramian A, Barmby P, Cralu R, Bingham D, Hlozek R, Kavelaars J, Stenning D, Benincasa S, Thomas G, Thanjavur K, Bovy J, Cami J, Carlberg R, **Lawler S**, Liu A, Ngo H, Rahman M, Rupen M

2019 – *White Paper for the Canadian Astronomy Long Range Plan 2020, arXiv 1910.08857*

### **Debris Disks as Probes of Exoplanetary Systems**

Matthews B, Boley A, Dong R, **Lawler S**, van der Marel N, White J

2019 – *White Paper for the Canadian Astronomy Long Range Plan 2020*

### **How would Planet 9 (if it Exists) Affect the Distribution of Pebbles and Planetesimals in the Outer Solar System?**

**Lawler S.**

2017 – *Chondrules as Astrophysical Objects*, LPI Contribution No. 1975, id 2027

### **The Disk and Planets of Solar Analogue $\tau$ Ceti**

**Lawler S**, Di Francesco J, Kennedy G, Sibthorpe B, Booth M, Vandenbussche B, Matthews B, & Tuomi M

2015 – *18th Cambridge Workshop on Cool Stars, Stellar Systems, and the Sun, Proceedings of the conference held at Lowell Observatory, CSSS 18, 783*

### **The Debiased Kuiper Belt: Our Solar System as a Debris Disk**

**Lawler S**

2014 – *Proceedings of the International Astronomical Union, IAUS 299, 232*

### **Additional Keplerian Signals in the HARPS data for Gliese 667C: Further Analysis**

Gregory P, **Lawler S**, & Gladman B

2014 – *Proceedings of the International Astronomical Union, IAUS 299, 287*

## MINOR PLANET CENTER CIRCULARS

total: 18

The results of small-body observations are reported to the Minor Planet Center (MPC) of the International Astronomical Union (IAU), and are published as minor planet electronic circulars (MPEC). In the listings below, TNO = Trans-Neptunian Object (that is, Kuiper Belt Object).

- MPEC 2015-H61. 2007 RM<sub>314</sub>
- MPEC 2015-H54. 2007 LH<sub>38</sub>
- MPEC 2015-H49. 2006 SG<sub>415</sub>



- MPEC 2015-H04. 2008 JO<sub>41</sub>
- MPEC 2015-H03. 2007 LF<sub>38</sub>
- MPEC 2015-G68. 2007 RY<sub>326</sub>
- MPEC 2015-G21. 2007 RL<sub>314</sub>
- MPC 75602, 2011. Observations of Jovian and Uranian Moons
- MPEC 2011-O40. Eleven New TNOs (CFEPS)
- MPEC 2011-O19. Five New TNOs (CFEPS)
- MPC 74823, 2011. Observations of Jovian and Uranian Moons
- MPEC 2011-H58. 36 New TNOs (CFEPS)
- MPEC 2011-H55. Ten TNO Recoveries (CFEPS)
- MPEC 2011-G81. Discovery of 12 Plutinos (CFEPS)
- MPEC 2011-G80. 2004 VV<sub>130</sub>
- MPC 74397, 2011. Observations of Jovian and Uranian Moons
- MPEC 2009-S76. Recovery of Lost Jovian Moon S/2003 J 17
- MPEC 2009-S59. 2009 MS<sub>9</sub>

## LEAD-AUTHOR CONTRIBUTED CONFERENCE PRESENTATIONS

talks: 17, posters: 10

### **The Populations of Plutinos and Other Resonant TNOs in the Distant Solar System**

**Lawler S**, Pike R, Alexandersen M, Cromptvoets B, Peltier L, & Volk K

Oral Presentation: *AAS Division for Dynamical Astronomy annual meeting*, New York, NY, hybrid (presented remotely). Apr. 2022.

### **Visibility Predictions for Near-Future Satellite Megaconstellations**

**Lawler S**, Boley A, and Rein H

Poster Presentation: *AAS Division for Planetary Science annual meeting*, online. Oct. 2021.

### **Neptune's Mean-Motion Resonances are Full of TNOs**

**Lawler S** and the OSSOS Team

Oral Presentation: *CASCA 2019*, Montreal, QC. June 2019.

### **Resonant TNO Populations as Measured by OSSOS**

**Lawler S** and the OSSOS Team

Oral Presentation: *New Horizons in Planetary Systems*, Victoria, BC. May 2019.

### **Fossilized Resonant Dropouts Imply Neptune's Migration was Grainy and Slow**

**Lawler S**, Pike R, Kaib N, and the OSSOS Team

Oral Presentation: *Astronomy Northwest by Southwest 2018*, Vancouver, BC. November 2018.

### **Constraints on a Shepherd Planet in the Fomalhaut System**

**Lawler S** & Waller F

Oral Presentation: *Current and Future Trends in Debris Disk Science*, Victoria, BC. September 2018.

### **Measuring the Transition Between Two Size Distribution Slopes in the Scattering Disk**

**Lawler S**, Shankman C, Kavelaars J, Bannister M, Chen Y, Gladman B, Fraser W, Gwyn S, Kaib N, Petit J, & Volk K

Oral Presentation: *The Transneptunian Solar System*, Coimbra, Portugal. March 2018.

### **Does our Solar System Need Another Planet? Discoveries in the OSSOS Survey**

**Lawler S**, Shankman C, Bannister M, Gladman B, Kavelaars J, Kaib N, and the OSSOS Team

Oral Presentation: *Women in Planetary Science and Exploration*. Toronto, ON. February 2018.

### **Debris Disks in STIPS**

**Lawler S**

Oral Presentation: *Know Thy Star, Know Thy Planet*. Pasadena, CA, USA. October 2017.

### **Resonant Trails or Beards?**

**Lawler S**

Oral Presentation: *OSSOS Belfast Workshop*. Belfast, UK. July 2017.

### **How Would Planet 9 (if it Exists) Affect the Distribution of Pebbles and Planetesimals in the Outer Solar System?**

**Lawler S**

Oral Presentation: *Chondrules as Astrophysical Objects*. Vancouver, BC. May 2017.

**How Would Planet 9 Affect the Kuiper Belt?**

**Lawler S**, Shankman C, Kaib N, Bannister M, Gladman B, & Kavelaars J

Poster Presentation: *Chondrules as Astrophysical Objects*. Vancouver, BC. May 2017.

**Observational Signatures of a Massive Distant Planet on the Scattering Disk**

**Lawler S**, Shankman C, Kaib N, Bannister M, Gladman B, & Kavelaars J

Poster Presentation: *DPS 48*. Pasadena, CA, USA. October 2016.

**Fomalhaut b is Probably Not a Planet**

**Lawler S**, Greenstreet S, & Gladman B

Oral Presentation: *Extreme Solar Systems III*. Kona, HI, USA. December 2015.

**Fomalhaut b is Probably Not a Planet**

**Lawler S**, Greenstreet S, & Gladman B

Poster Presentation: *Gordon Research Conference on Origins of Solar Systems*. Hadley, MA, USA. June 2015.

**The Disk and Planets of Solar Analogue  $\tau$  Ceti**

**Lawler S**, Di Francesco J, Kennedy G, Sibthorpe B, Booth M, Vandenbussche B, Matthews B, Tuomi M, & the Herschel SPIRE SAG6 GT Team.

Poster Presentation: *Cool Stars 18*. Flagstaff, AZ, USA. June 2014.

**The Debiased Kuiper Belt**

**Lawler S** & the CFEPS Team.

Oral Presentation: *Women in Physics Canada*. Burnaby, BC. July 2013.

**The Debiased Kuiper Belt: Our Solar System as a Debris Disk**

**Lawler S** & the CFEPS Team.

Oral Presentation: *IAU Symposium 299*. Victoria, BC. June 2013.

**Massive Asteroid Belts in Kepler Exoplanet Systems**

**Lawler S** & Gladman B.

Oral Presentation: *Women in Physics Canada*. Vancouver, BC. July 2012.

**Infrared Excesses in Kepler Multiplanet Systems Using WISE**

**Lawler S** & Gladman B.

Poster Presentation: *DPS 43*. Nantes, France. October 2011.

**On-Sky Detection Biases for Plutinos in the Kozai Resonance**

**Lawler S** & Gladman B.

Oral Presentation: *AAS 217* (306.03). Seattle, WA, USA. January 2011.

**Detection Biases for Resonant Kuiper Belt Objects**

**Lawler S**, Gladman B, Petit J, Kavelaars J, Jones R, & Parker J.

Poster Presentation: *DPS 42* (40.13). Pasadena, CA, USA. October 2010.

**Populations and Orbital Element Distributions of Resonant Trans-Neptunian Objects**

**Lawler S**, Gladman B, Petit J, Kavelaars J, Jones R, & Parker J.

Oral Presentation: *TNO 2010*. Philadelphia, PA, USA. July 2010.

**The Gas Component of the KH 15D Transition Disk**

**Lawler S**, Hamilton C, Herbst W, Johns-Krull C, Mundt R, & Winn J.

Poster Presentation: *AAS 213* (409.08). Long Beach, CA, USA. January 2009.

**The Gas Component of the KH 15D Transition Disk**

**Lawler S**, Hamilton C, Herbst W, Johns-Krull C, Mundt R, & Winn J.

Poster Presentation: *New Light on Young Stars*. Pasadena, CA, USA. October 2008.

**A Search for Warm Dust in the Habitable Zones around Solar-Type Stars**

**Lawler S**, Ciardi D, Beichman C, Tanner A, Bryden G, Stapelfeldt K, Harker D, & Akeson R.

Oral Presentation. *TPF/Darwin Workshop*. Pasadena, CA, USA. November 2006.

## A Search for Warm Dust in the Habitable Zones around Solar-Type Stars

Lawler S, Ciardi D, Beichman C, Tanner A, Bryden G, Stapelfeldt K, Harker D, & Akeson R.

Poster Presentation. *Cool Stars 14*. Pasadena, CA, USA. November 2006.

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### TEACHING

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#### COURSES TAUGHT

<b>ASTR 201: Solar System Astronomy</b> , Campion College <i>Professor</i> . Mostly science majors, 23 students - hybrid delivery	winter 2022
<b>ASTR 101: Introduction to Astronomy</b> , Campion College <i>Professor</i> . Non-science majors, 155 students - online course	winter 2022
<b>ASTR 119: Astrobiology</b> , Campion College <i>Professor</i> . Mostly science majors, 21 students - remote delivery	fall 2021
<b>ASTR 101: Introduction to Astronomy</b> , Campion College <i>Professor</i> . Non-science majors, 131 students - online course	fall 2021
<b>ASTR 201: Solar System Astronomy</b> , Campion College <i>Professor</i> . Mostly science majors, 23 students - remote delivery	winter 2021
<b>ASTR 101: Introduction to Astronomy</b> , Campion College <i>Professor</i> . Non-science majors, 115 students - online course	winter 2021
<b>ASTR 290AA: Astrobiology</b> , Campion College <i>Professor</i> . Mostly science majors, 17 students - remote delivery	fall 2020
<b>ASTR 101: Introduction to Astronomy</b> , Campion College <i>Professor</i> . Non-science majors, 104 students - remote delivery	fall 2020
<b>ASTR 201: Solar System Astronomy</b> , Campion College <i>Professor</i> . Mostly science majors, 13 students	winter 2020
<b>ASTR 101: Introduction to Astronomy</b> , Campion College <i>Professor</i> . Non-science majors, 100 students	winter 2020
<b>ASTR 101: Introduction to Astronomy</b> , Campion College <i>Professor</i> . Non-science majors, 106 students	fall 2019
<b>ASTR 255: Introduction to Planetary Science</b> , University of Victoria <i>Sessional lecturer</i> . 2nd year astronomy majors, 18 students	spring 2019
<b>ASTR 255: Introduction to Planetary Science</b> , University of Victoria <i>Sessional lecturer</i> . 2nd year astronomy majors, 9 students	spring 2018
<b>ASTR 255: Introduction to Planetary Science</b> , University of Victoria <i>Sessional lecturer</i> . 2nd year astronomy majors, 12 students	spring 2015
<b>ASTR 310: The Solar System</b> , University of British Columbia (Prof. Gladman) <i>Head teaching assistant</i> . 3rd-4th year non-science majors, 150 students	fall 2011
+ <b>6 additional semesters</b> of teaching assistantships at UBC, Wesleyan, and Caltech + <b>2 guest lectures</b> at UVic	Jun. 2002-Jul. 2007

#### TEACHING ASSISTANT/LAB INSTRUCTOR SUPERVISION

<b>Mark Walker</b> : ASTR 101 lab instructor/marker	F19-present
<b>Karthik Suresh</b> : ASTR 101 lab instructor	F21
<b>Trevor Moskal</b> : ASTR 101 lab instructor	F19-W20

#### SCIENCE COMMUNICATION ARTICLES FOR THE GENERAL PUBLIC

See <https://uregina.ca/~slb861/press.html> for a list with links to published articles

<b>Curious Kids: Why does it matter if Pluto is a planet or a dwarf planet?</b> <i>The Conversation Canada</i> , by Samantha Lawler (editor: Nehal El-Hadi)	May 2022
<b>Satellites may devastate research astronomy. How we can save the night sky for science</b> Invited op-ed, <i>Los Angeles Times</i> , by Samantha Lawler (editor: Valerie Nelson)	Jan. 2022
<b>Soon, 1 out of every 15 points of light in the sky will be a satellite</b> <i>The Conversation Canada</i> , by Samantha Lawler (editor: Nehal El-Hadi)	Dec. 2021
<b>Curious Kids: Why are the northern lights only spotted at areas around the poles?</b> <i>The Conversation Canada</i> , by Samantha Lawler (editor: Nehal El-Hadi)	Oct. 2021
<b>It's not too late to save the night sky, but gov'ts need to get serious about protecting it</b> <i>The Conversation Canada</i> , by Samantha Lawler and Aaron Boley (editor: Nehal El-Hadi)	Jun. 2021
<b>Previously thought to be science fiction, a planet in a triple star system has been discovered</b> <i>The Conversation Canada</i> , by Samantha Lawler (editor: Nehal El-Hadi)	Mar. 2021
<b>SpaceX's Starlink Satellites are about to Ruin Stargazing for Everyone</b> <i>The Conversation Canada</i> , by Samantha Lawler (editor: Nehal El-Hadi)	Nov. 2020
<b>Why astronomers now doubt there is an undiscovered 9th planet in our solar system</b> <i>The Conversation Canada</i> , by Samantha Lawler (editor: Nehal El-Hadi)	May 2020
<b>Curious Kids: Is Pluto a Planet or Not?</b> <i>The Conversation Canada</i> , by Samantha Lawler (editor: Nehal El-Hadi)	April 2020
<b>How space exploration became a wake up call on climate change</b> <i>America Magazine</i> , by Samantha Lawler (editor: Robert Sullivan)	July 2019

#### INVITED PUBLIC LECTURES AND PANELS

- Megaconstellations of satellites are about to ruin the night sky for everyone**  
Royal Astronomical Society of Canada Mississauga Chapter, Mississauga, ON (remote). 27 May 2022
- Megaconstellations of satellites are about to ruin the night sky for everyone**  
Greenway Lecture Series, Palomar Observatory, Caltech, Pasadena, CA, USA (remote). 21 May 2022
- Megaconstellations of satellites are about to ruin the night sky for everyone**  
for the University of Regina Lifelong Learning Centre, Regina, SK (hybrid, in-person talk). 12 May 2022
- Megaconstellations of satellites are about to ruin the night sky for everyone**  
for Bushwakker's Brewpub science speaker series, Regina, SK (remote). 21 Apr. 2022
- Megaconstellations of satellites are about to ruin the night sky for everyone**  
for the Heart of the Valley amateur astronomy club, Corvallis, OR, USA (remote). 12 Apr. 2022
- IAU Centre for the Preservation of the Dark and Quiet Sky Listening Session**  
Presenter for the SatHub Working Group, for members of the general public (remote). 31 Mar. 2022
- Including Indigenous voice in astronomy education**  
Expert panelist for an online Canadian Astronomical Society discussion (remote). 31 Mar. 2022
- Getting your research out there**  
Expert panelist for University of Regina Centre for Educational Research, Collaboration and Development (remote). Feb. 2022
- Queens University (Un)Hackathon**  
Expert panelist and judge for a week-long undergraduate project on megaconstellation mitigation.  
Queens University, Kingston, ON (remote). Feb. 2022
- Viewing the Night Sky**  
for the Regina Public Library. Regina, SK (remote). 3 Oct. 2021
- Astronomy "beer chat"**

For the Cathedral neighbourhood science group. Regina, SK (remote). 30 Apr. 2021

### **Stellar Evolution**

Royal Astronomical Society-Regina Centre monthly meeting. Regina, SK (remote). 9 Apr. 2021

### **Life on Venus?**

Royal Astronomical Society-Regina Centre monthly meeting. Regina, SK (remote). 2 Oct. 2020

### **Planet 9 or Planet Nein? Discoveries in the Outer Solar System**

University of Regina Alumni "Research with Impact" series. Regina, SK (remote). 23 June 2020

### **Recent Discoveries in the Kuiper Belt**

Royal Astronomical Society-Regina Centre monthly meeting. Regina, SK (remote). 1 May 2020

### **Planet 9 or Planet Nein?**

Campion College "Idle Talk" series. Regina, SK. 4 October 2019

### **Planet 9 or Planet Nein?**

Nanaimo Astronomical Society monthly meeting. Nanaimo, BC. 28 March 2019

### **New Horizons' View of 2014 MU<sub>69</sub>: a Pancake-Snowman in the Kuiper Belt**

Nerd Nite - Victoria. Victoria Event Centre, Victoria, BC. 20 March 2019

### **Planet 9 or Planet Nein?**

Royal Astronomical Society-Victoria Centre monthly meeting. Victoria, BC. 13 February 2019

### **Planet 9 or Planet Nein?**

Hosted by Space Concordia and the Department of Physics, Concordia University. Montreal, QC. 6 December 2018

### **Planet 9 or Planet Nein?**

"Pint of Science" Canada-wide science program, Moon Under Water Brewpub. Victoria, BC. 14 May 2018

### **Planet 9 or Planet Nein?**

Astronomy Day, Royal BC Museum. Victoria, BC. 21 April 2018

### **What on Earth is Fomalhaut b?**

Royal Astronomical Society-Victoria Centre monthly meeting. Victoria, BC. 10 September 2014

### **What on Earth is Fomalhaut b?**

Cowichan Valley Starfinders annual Island Star Party. Duncan, BC. 23 August 2014

### **What's up with our Sky? A Lecture on Atmospheric Optics**

City of Surrey Environmental Extravaganza. Surrey, BC. 4 June 2012

### **The Planet-Forming Disk of the Young Star KH 15D**

Astronomical Society of Greater Hartford monthly meeting. Hartford, CT, USA. 18 March 2009

## INVITED UNIVERSITY GUEST LECTURES

**Data Science and Observational Astrophysics, guest lecture on megaconstellation light pollution**  
McGill University (Montreal, QC, remote), Prof. Adrian Liu, 1 hour lecture, 40 students. 4 Apr 2022.

**Astrostatistics, guest lecture and discussion on megaconstellation light pollution**

Olin College (Boston, MA, USA, remote), Prof. Carrie Nugent, 1.5 hour lecture, 40 students. 11 Apr 2022.

**Astronomy undergraduate seminar course, guest lecture on career and research**

Western University, ON, remote), Prof. Sarah Gallagher, 1 hour lecture, 50 students. 18 Mar 2021.

## PRESS - TEACHING SCIENCE TO THE GENERAL PUBLIC

See <https://uregina.ca/~slb861/press.html> for a list of highlights with links to published articles

## Satellite Pollution

*Interesting Engineering* (June 2022), *CV Weekly* (Los Angeles, Jun 2022) Spacepod Podcast (Jun 2022), Today FM radio (New Zealand, May 2022), *Scientific American* (Apr 2022), CTV Regina (May 2022), Dubai Eye radio (Dubai, Apr 2022), CNN national TV (Apr 2022), CTV Saskatoon (Feb 2022), *Physics Today* (Feb 2022), *Scientific American* (Feb 2022), CBC National Science News (Feb 2022), NewsNation TV (Chicago, Feb 2022), *The New York Times* (Feb 2022), FM4 Radio (Austria, Dec 2021), Busan Morning Wave Radio (South Korea, Dec 2021), *Wired Magazine* (Dec 2021), CBC *As It Happens* with Carol Off (Dec 2021), CBC Saskatchewan Blue Sky (Oct 2021), Yale Scientific Magazine (Oct 2021), *EarthSky* (Sep 2021), John Gormley Live (Sep 2021), CBC Saskatchewan The Morning Edition (Sep 2021), CTV Regina (Sep 2021), Global News Regina (Sep 2021), *New Scientist* (Sep 2021), CBC Saskatchewan radio (Sep 2021), *Science News* (Sep 2021), *New Scientist* (Aug 2021), 580 CFRA radio (Ottawa, Jul 2021), CTV National News (Jul 2021), *Metro World News* (Jun 2021), *The Hill Times* (Ottawa, Jun 2021), *Scientific American* (Jun 2021), CTV Regina (May 2021), CTV Toronto (May 2021), *SkyNews* (Mar 2021), NPR Great Plains (Feb 2021), NPR *All Things Considered* (Feb 2021), 570 News Kitchener (Dec 2020), CBC Saskatchewan's The Afternoon Edition (Dec 2020), NewsTalk 1010 Radio Toronto (Dec 2020), Global News Radio KCNW Vancouver (Dec 2020), CBC national news (Dec 2020), 980 CJME Regina (Dec 2020), CJAD 800AM Toronto (Dec 2020), CBC *The National* (Dec 2020), CTV Regina (Nov 2020), Global Saskatoon News (Nov 2020)

## Planet 9 and the Outer Solar System

*Sky & Telescope* (Dec 2021), *Newsweek* (Nov 2021), *New Scientist* (Nov 2021), *New Scientist* (Jun 2021), *Gizmodo Magazine* (Jun 2021), *Inverse Magazine* (New York, Jun 2021), *Mashable* (Jun 2021), Tim Dowling podcast (Feb 2021), *Science News* (Feb 2021), *Nature News* (Feb 2021), *Science Magazine* (Feb 2021), *Axios* (Jul 2020), U. Regina's *Discourse Research Magazine* (May 2020), *Prairie Dog Magazine* (Oct 2019), *Scientific American* (Jun 2017), *Scientific American* (Oct 2016), *Nature News* (Mar 2016)

## Night sky viewing for the general public

CBC Saskatchewan *The Morning Edition* (June 2022), CTV Regina (Jun 2022), CBC Saskatchewan *The Morning Edition* (Apr 2022), CBC Saskatchewan *The Afternoon Edition* (Apr 2022), 980 CJME (Mar 2022), CBC Saskatoon (Mar 2022), CBC Saskatchewan *The Morning Edition* (Mar 2022), *Mashable* (Feb 2022), John Gormley Live (Jan 2022), CBC Saskatchewan *The Morning Edition* (Jan 2022), CBC Saskatchewan *The Afternoon Edition* (Dec 2021), Global News Saskatoon (Dec 2021), CBC Saskatchewan *The Morning Edition* (Nov 2021), CTV Regina (Nov 2021), CBC Saskatchewan *The Morning Edition* (Sep 2021), CBC News (Aug 2021), CTV Regina (Jun 2021), *The Prairie Dog* (Jun 2021), CBC Saskatchewan *The Morning Edition* (Jun 2021), CBC Saskatchewan *The Morning Edition* (Apr 2021), Global News Saskatoon (Mar 2021), CBC Saskatchewan *The Morning Edition* (Jan 2021), CBC Saskatchewan *The Morning Edition* (Aug 2020), CBC Saskatchewan *The Morning Edition* (Jul 2020)

## OUTREACH WORK FOR KIDS

Remote meetings with classrooms in California and Alberta	2022
Mentor for U of Regina EYES summer program for girls	S22
EYES Women in STEM panel	2022
Remote meetings with classrooms in Regina and California	2021
Created a lesson on exoplanets for kids homeschooled during the pandemic (U of R media)	W20
Remote meetings with students in classes all over North America during COVID closures	2020-21
Regina area classroom visits: Winston Knoll, Milestone, Lakeview, White City	2019-20
Volunteered with Can-YES program, remote lectures and lecture preparation	2018-19
Regular volunteer with "Skype a scientist"	2017-19
Regular volunteer with "Scientists and Innovators in the Schools"	2014-18
Volunteer at the RASC "Ask an Astronomer" booth	2014, 2015
UBC Summer Science Camp: helped plan and teach astronomy activities	2010, 2011
UBC CEDAR Camp: helped plan and teach astronomy activities for Indigenous students	2010, 2011
Volunteer astronomer at Wesleyan University public observing nights	2007-2009
Other classroom visits: multiple visits per year to schools near my home at the time	2005-2019

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## SERVICE

## SERVICE TO THE COLLEGE

Co-organized a "Day on the Land" for Campion faculty and staff	S22
Environmental Sustainability Committee - Campion College	W22-present
Workload Working Group - Campion College	W21-present
Established and ran a weekly student/staff "Craft Cafe" as a mental health initiative	W20-present
Sessional Appointments and Research Committee - Campion College	S20-W21
Future Faculty Hires Committee – Campion College	W19-F20
Library and Copyright Committee – Campion College	F19-S20

SERVICE TO THE UNIVERSITY

Member, Climate Action Committee - University of Regina	S21-present
Member, Climate Education Committee - University of Regina	S21-present
Member, working group to refurbish the university astronomy teaching laboratory	W20-present
COVID Education group (founder and member) - University of Regina	W21-W22
Tenure-track lab instructor hiring committee - Dept. of Physics, University of Regina	F20-W21
Outreach Committee – Department of Physics, University of Regina	F19-present
Environmental Sustainability Committee – University of Regina	F19-present

SERVICE TO THE ASTRONOMY COMMUNITY

Member of the Canadian National Telescope Time Allocation Committee	[dates withheld]
Panelist for NASA research grant decision committee	[dates withheld]
External reviewer, NASA research grant funding panel	[dates withheld]
External reviewer for Gemini Observatory and the Canada-France Hawaii Telescope	[dates withheld]
Lead organizer for the Canadian Virtual Astronomy Seminar series	W21-W22
Chair of the Canadian Astronomical Society (CASCA) Awards Committee	F21-S22
Member of the Canadian Astronomical Society (CASCA) Awards Committee	F19-S21
On the CASCA Equity, Diversity, and Inclusivity Committee	W20-present
Co-founder and vice-chair of the CASCA Postdoc Committee	W19-present
On LOC for <i>New Horizons in Planetary Systems</i> Conference	W19-S19
Referee for the <i>Astrophysical Journal</i> , the <i>Astronomical Journal</i> , <i>The Planetary Science Journal</i> , <i>Advances in Space Research</i>	

SERVICE AT PREVIOUS INSTITUTIONS

Founder and organizer, NRC-Herzberg monthly women’s lunch group	2018-2019
Member of the NRC-Herzberg Travel Committee for allocating the travel budget	2016-2019
Organizer for the NRC-Herzberg/UVic “Stuff Around Stars” weekly journal club	2015-2019
NRC First Aid Attendant (Level 1 CPR)	2015-2019
Colloquium organization for NRC-Herzberg	2013-2019
Organizer of the UBC Planetary Journal Club	2010-2011
Co-organizer of the UBC Vivien M. Srivastava Career Mentoring Workshop for Students	2010
Student director of Wesleyan’s nightly observing program	2008-2009

PROFESSIONAL DEVELOPMENT

Attended online workshop on "Better Land Acknowledgements," 28 Jun 2022  
 Attended "Turtle Island Indigenous Science Conference", University of Manitoba, 14-16 June 2022  
 Attended online workshop on "Engaging Indigenous Elders," 5 May 2022