

Nicole Gromek

✉ gromekn@mcmaster.ca  nicolegromek.github.io  Nicole Gromek

Education

-
- Doctor of Philosophy (Ph.D.) in Physics and Astronomy** 2024 - Present
McMaster University
- Thesis Supervisor: Prof. Ryan Cloutier
- Master of Science (M.Sc.) in Physics and Astronomy** 2022 - 2024
McMaster University
- Thesis Supervisor: Prof. Ryan Cloutier
 - Thesis: [A Spectroscopic Framework for Deriving Elemental Abundances of M Dwarfs](#) 
- Honours Bachelor of Science (with Distinction)** 2017 - 2021
University of Toronto Mississauga
- Majors in Astronomy and Physics with a Minor in Chemistry. CGPA: 3.39.
 - Coursework: Quantum Mechanics, Electrodynamics, Statistical Mechanics, Applied Statistics, Scientific Computing, Computational Physics

Research Experience

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- Graduate Research** 2022 - Present
McMaster University — Supervisor: Prof. Ryan Cloutier Hamilton, ON
- Investigating the chemical connection between stars and their planets, using high-resolution spectroscopy to measure the elemental abundances of cool, planet-hosting stars.
 - Member of the Near InfraRed Planet Searcher (NIRPS) Consortium.
- Summer Undergraduate Research Program - Astronomy** 2021 - 2022
University of Toronto — Supervisor: Dr. Jennifer West Toronto, ON
- Analyzed the magnetic field structure and polarization of the Cygnus Loop, a supernova remnant, using radio wavelength data from LOFAR, DRAO, and GALFACTS.
 - Featured as [SURP Student Spotlight - July 2021](#) 
 - Continued afterwards as Research Assistant

Teaching and Work Experience

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- Portable Planetarium Manager** 2024 - Present
W. J. McCallion Planetarium - McMaster University
- Coordinated a team of presenters, and regularly maintained and managed the portable planetarium that is designed to reach under-served communities.
- Planetarium Presenter** 2022 - Present
W. J. McCallion Planetarium - McMaster University
- Presented educational shows on topics in astronomy to wide range of audiences.
- Teaching Assistant** 2022 - Present
McMaster University
- **Head TA for PHYS1A03**
 - TA for ASTRON2B03, DATA2NM3, PHYS1A03
- University of Toronto Mississauga* 2021
- AST101 and AST201

Publications

First Author

Gromek, N., et al., *Elemental Abundances of Cool Stars: A Spectroscopic Framework Applied to Five Planet-Host Stars*, 2026, PASP ([Submitted](#)) [🔗](#)

Contributing Author

Piaulet-Ghorayeb, C., **Gromek, N.**, et al., *Missing Carbon on a sub-Neptune: The surprisingly carbon-poor high-metallicity atmosphere of GJ 9827 d*, 2026, ApJ (In Prep.)

Turner, D., et al., *The mass of the exo-Venus Gliese 12 b, as revealed by HARPS-N, ESPRESSO, and CARMENES*, 2026, MNRAS ([Published](#)) [🔗](#)

Weisserman, D., **Gromek, N.**, et al., *Super-Earth Masses and Stellar Abundances from NIRPS Reveal Tentative Evidence for Water-Rich Formation around M Dwarfs*, 2026, A&A ([Published](#)) [🔗](#)

Osborn, A., et al., *Confirmation of the hot super-Neptune TOI-672 b with NIRPS and insights into the Neptunian desert around M dwarfs*, 2026, A&A ([Published](#)) [🔗](#)

Srivastava, A., et al., *TOI-4552 b: An exceptionally dense ultra-short period rocky world revealed by NIRPS and TESS*, 2026, A&A ([Published](#)) [🔗](#)

Additional Publications with Co-Authorship

de Lima Gomes, R., et al., *K2-321 b: a potential sub-Neptune water world characterized by NIRPS*, 2026, A&A (In Prep.)

L'Heureux, A., et al., *Radial velocity detection of the TRAPPIST-1 planetary system with SPIRou and NIRPS*, 2026, A&A ([Accepted](#)) [🔗](#)

Pelletier, S., et al., *The breaking of cold traps and onset of titanium in ultra-hot Jupiter atmospheres: WASP-189b in context*, 2026, A&A ([Published](#)) [🔗](#)

Gomes da Silva, J., et al., *Blind search for activity-sensitive lines in the near-infrared using HARPS and NIRPS observations of Proxima and Gl 581*, 2025, A&A ([Published](#)) [🔗](#)

Vaulato, V., et al., *Atmospheric composition and circulation of the ultra-hot Jupiter WASP-121b with joint NIRPS, HARPS and CRIRES+ transit spectroscopy*, 2025, A&A ([Published](#)) [🔗](#)

Srivastava, A., et al., *Night sky emission correction techniques for high-resolution spectroscopy: a demonstration with NIRPS*, 2025, A&A ([Submitted](#))

Parc, L., et al., *NIRPS and TESS reveal a peculiar system around the M dwarf TOI-756: a transiting sub-Neptune and a cold eccentric giant*, 2025, A&A ([Published](#)) [🔗](#)

Lamontagne, P., et al., *NIRPS Tightens the Mass Estimate of GJ 3090 b and Detects a Planet Near the Stellar Rotation Period*, 2025, A&A ([Published](#)) [🔗](#)

Volunteer Positions

Social Media Manager

2022 - Present

Promoting Inclusivity in Physics & Astronomy (PIPA)

- Managed the social media accounts and promoted events for PIPA, helping to ensure a supportive and diverse environment within the department.

Physics and Astronomy Representative

2023 - Present

Science Graduate Student Association (SciGSA)

- Organized events, held regular meetings and advertised the services of the SciGSA on behalf of the graduate students in the Physics and Astronomy department.

President

2019 - 2020

Erindale Physical and Chemical Sciences Society (ECPs)

- Led and managed an executive team to develop and run networking events, workshops, and services providing academic support to undergraduate students.

Physics Member-at-Large

2018 - 2019

Erindale Physical and Chemical Sciences Society (ECPS)

- Aided in designing, advertising, and setting up events, provided feedback from the student membership to the society, as well as other miscellaneous responsibilities.

Scholarships and Awards

Dr. Ron and Helene Goodman Physics Travel Award	2025
<i>Amount: \$1,379</i>	
Physics & Astronomy Graduate Support Award	2025
<i>Amount: \$468</i>	
McMaster University Entrance Scholarship	2022
<i>Amount: \$6,000</i>	
University of Toronto Summer Undergraduate Research Award	2021
<i>Amount: \$9,595</i>	
Western University Summer Exploration Internship Award (Declined)	2021
<i>Amount: \$7,500</i>	
University of Toronto Scholar Award	2017
<i>Amount: \$7,500</i>	
University of Toronto Mississauga Entrance Scholarship	2017
<i>Amount: \$3,000</i>	

Presentations

Emerging Researchers in Exoplanet Science (ERES) XI	2026
<i>University of Michigan</i>	<i>Ann Arbor, MI</i>
Great Lakes Exoplanet Area Meeting (GLEAM)	2025
<i>University of Wisconsin-Madison</i>	<i>Madison, WI</i>
NIRPS Online Meeting	2025
<i>NIRPS Consortium</i>	<i>Montreal, QC</i>
From Stars to Life	2025
<i>McMaster University</i>	<i>Hamilton, ON</i>
Emerging Researchers in Exoplanet Science (ERES) IX	2024
<i>Cornell University</i>	<i>Ithaca, NY</i>
Graduate Research Symposium	2023
<i>McMaster University</i>	<i>Hamilton, ON</i>
Physics and Astronomy Symposium Day	2023
<i>McMaster University</i>	<i>Hamilton, ON</i>
◦ Won Best Presentation 	

Conferences and Workshops

Cool Stars 23	2026
<i>Virtual</i>	
◦ Poster Presentation	
Physics Education Symposium	2026
<i>McMaster University</i>	
Emerging Researchers in Exoplanet Science (ERES) X	2025
<i>Princeton University</i>	
◦ Poster Presentation	

Know Thy Star, Know Thy Planet 2 <i>California Institute of Technology</i> ◦ Poster Presentation	2025
Canadian Astronomical Society (CASCA) Annual General Meeting <i>Virtual / University of British Columbia / University of Toronto / St. Mary's University</i> ◦ Poster Presentations in 2023, 2024 & 2025 ◦ Won Best Poster in 2025	2022, 2023, 2024 & 2025
Canadian Conference for Undergraduate Women in Physics (CCUWiP) <i>University of Toronto / Virtual / McGill University</i> ◦ Represented McMaster University at Grad Fair in 2024	2020, 2021 & 2024
AstroEDU: Bridging Research & Practice <i>University of Toronto</i>	2023
CITA Planet Day <i>University of Toronto</i>	2021, 2022 & 2023
Great Lakes Exoplanet Area Meeting (GLEAM) <i>Ohio State University</i> ◦ Presented a Flash Talk	2022
Sagan Exoplanet Summer Hybrid Workshop <i>Virtual / California Institute of Technology</i>	2022
First Science Results from JWST <i>Virtual / Space Telescope Science Institute (STScI)</i>	2022
Science Communication Bootcamp <i>University of Toronto</i>	2022
Stellar Stats Workshop <i>University of Toronto</i>	2021 & 2022

Volunteering and Outreach

Niigani Miinigowiziwin (We Give These Gifts to the Future)	2025 - Present
Sidewalk Astronomy	2022 - Present
Physics BOOM	2025
May @ Mac	2025
Soapbox Science	2024
Coding the Cosmos	2024
Eclipse Ambassador	2024
Elevate: A Day for Inclusion in Science	2023, 2024, 2025 & 2026
Doors Open Toronto	2022 & 2023
Science Rendezvous	2022 & 2023
AstroTours at U of T	2021 - 2023
Girls in STEM Workshop	2022
Graduate Student Panelist for McMaster Undergraduate Physics Society	2022
Science Unlimited Summer Camp Volunteer	2022
U of T Talks: Interstellar Health	2022
Undergraduate Panelist for Youth and Astronomy	2022

Pursue STEM	2022
Dunlap Institute Virtual Summer School for Instrumentation Facilitator	2022
Let's Talk Astrophysics	2021
UTM Open House - Physics Volunteer	2019

Mentorships

McMaster Physics and Astronomy Graduate Mentorship	2023 - 2024
◦ Jinoo Kim	
McMaster Undergraduate Physics Society Mentorship Program	2022 - 2023
◦ Ryan Primdahl	
Erindale Chemical and Physical Sciences Society Mentorship	2018 - 2019
◦ Zara Zaman	

Skills

Languages: English, Polish, French, Spanish

Technologies: Python, L^AT_EX, Microsoft Office, R