

Nicole M. Ford

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EDUCATION	McGill University , Doctor of Philosophy, Physics <i>Advisor:</i> Daryl Haggard	2023 – Present
	McGill University , Master of Science, Physics <i>Advisors:</i> Daryl Haggard & John Ruan	2021 – 2023
	Williams College , Bachelor of Arts, Astrophysics & Studio Art Highest Honors in Astrophysics <i>Advisor:</i> Anne Jaskot	2016 – 2020
EXPERIENCE	Graduate Researcher - High Energy Astrophysics Trottier Space Institute at McGill (TSI) <i>Advisors:</i> Professor Daryl Haggard & Professor John Ruan	Aug 2021 – Present
	<ul style="list-style-type: none">• (PhD) Monitoring X-ray flux and variability of several low luminosity AGNs targeted by the <i>Event Horizon Telescope</i> collaboration to learn about their accretion and links to radio/multi-wavelength emission.• (MSc) Identified ion absorption signatures for different types of kilonovae using simulated spectra and machine learning techniques, and developed kilonova observational follow-up code for use with <i>CFHT</i>.	
	Research Intern - Computational Astrophysics Lawrence Berkeley National Laboratory, DOE SULI Program <i>Advisors:</i> Dr. Ann Almgren, Dr. Donald Willcox, & Dr. Sherwood Richers	Aug 2020 – July 2021
	<ul style="list-style-type: none">• Simulated Type I x-ray bursts and neutrino emission around neutron stars/mergers using adaptive mesh refinement (AMReX, Castro codes) and particle-in-cell (Emu code) techniques.	
	Undergraduate Thesis Researcher - Galaxy Observations Williams College, Clare Boothe Luce Scholar Program <i>Advisor:</i> Professor Anne Jaskot	2019 – 2020
	<ul style="list-style-type: none">• Tested indicators for ionizing radiation escape in nearby star forming galaxies using <i>Hubble</i> & <i>SDSS</i> spectra.	
	Research Intern - Cosmic Ray Observations CERN and University of Geneva, Boston University Geneva Physics Program <i>Advisor:</i> Dr. Maura Graziani	Jan – Jul 2019
HONORS & AWARDS	<ul style="list-style-type: none">• Tracked solar activity via the <i>Alpha Magnetic Spectrometer</i>'s measured cosmic ray positron/electron ratio.	
	Research Assistant - Galaxy Observations University of Massachusetts, Amherst, Williams College Summer Science Research Fellowship <i>Advisor:</i> Professor Anne Jaskot	May – Aug 2018
	<ul style="list-style-type: none">• Searched for ionizing radiation escape in Green Pea galaxies' gas ionization structures using <i>Hubble</i> data.	
	REU Intern - Planet Transit Observations Wellesley College, Keck Northeast Astronomy Consortium (KNAC) NSF REU program <i>Advisor:</i> Professor Kim McLeod	May – Aug 2017
	<ul style="list-style-type: none">• Searched for light curve planet transits, collaboration with the Kilodegree Extremely Little Telescope group.	
HONORS & AWARDS	Doctoral Research Award , Fonds de recherche du Québec – Nature et technologies	2023-2027
	McGill Bicentennial Art & Science Exhibition "Traditional Media" Prize , McGill University	2022
	McGill Space Institute Fellowship , McGill University	2021-present
	AAS Chambliss Astronomy Achievement Award , Undergraduate Student Prize Winner	2020
HONORS & AWARDS	Clare Boothe Luce Scholar , Williams College	2018

PUBLICATIONS *Refereed Contributions*

Ford, N. M., Vieira, N., Ruan, J. J., Haggard, D., KilonovAE: Exploring Kilonova Spectral Features with Autoencoders, *submitted to ApJ*

Vieira, N., Ruan, J. J., Haggard, D., **Ford, N. M.**, et al., Spectroscopic r-Process Abundance Retrieval for Kilonovae I: The Inferred Abundance Pattern of Early Emission from GW170817, *ApJ* 944.2 [ads]

Flury, S., et al. (*incl.* **Ford, N. M.**), The Low-Redshift Lyman Continuum Survey II: New Insights into LyC Diagnostics, *ApJ* 930.2 (2022). [ads]

Flury, S., et al. (*incl.* **Ford, N. M.**), The Low-redshift Lyman Continuum Survey. I. New, Diverse Local Lyman Continuum Emitters, *ApJS* 260.1 (2022). [ads]

Richers, S., Willcox, D. E., **Ford, N. M.**, and Myers, A., Particle-in-Cell Simulation of the Neutrino Fast Flavor Instability, *PRD* 104.10 (2021). [ads]

Richers, S., Willcox, D. E., **Ford, N. M.**, and Myers, A., Particle-in-Cell Simulation of the Neutrino Fast Flavor Instability, *PRD* 103.8 (2021). [ads]

Harpole, A., **Ford, N. M.**, Eiden, K., Zingale, M., Willcox, D. E., Cavecchi, Y., Katz, M. P., Dynamics of Laterally Propagating Flames in X-ray Bursts. II. Realistic Burning & Rotation, *ApJ* 912.36 (2021). [ads]

Non-Refereed Contributions

Ford, N. M., KilonovAE: Exploring Kilonova Spectral Features with Autoencoders, 2023, *McGill University Masters Thesis*.

Ford, N. M., Optical Properties of Low-Redshift Star-Forming Galaxies with Potential Ionizing Radiation Escape, 2020, *Williams College Honors Thesis*. [online]

CONFERENCE & "Exploring Neutron Star Merger Spectral Features with Dimensionality Reduction"

SEMINAR TALKS *Talk:* Centre de Recherche en Astrophysique du Québec Summer Meeting, May 2023

"Exploring Neutron Star Merger Spectral Features Using Dimensionality Reduction"

Talk: Bishop's University Invited Talk, March 2023

"Exploring Kilonova Spectra and Nucleosynthesis with Variational Autoencoders"

Talk: American Astronomical Society 237th Meeting, January 2023

"CFHT Gravitational Wave Follow-up Pipeline Development"

Talk: Centre de Recherche en Astrophysique du Québec Summer Meeting, May 2022

"Dynamics of Laterally Propagating Flames in X-ray Bursts. II. Realistic Burning & Rotation"

Poster: American Astronomical Society 237th Meeting, January 2021

"Optical Properties of Low-Redshift Star-Forming Galaxies with Potential Ionizing Radiation Escape"

Poster: American Astronomical Society 235th Meeting in Honolulu, HI, January 2020

Poster & Talk: Conference for Undergraduate Women in Physics at Yale, January 2020

Talk: KNAC Fall 2019 Conference at Vassar College, October 2019

"Imaging Green Pea Galaxies"

Poster: KNAC Fall 2018 Conference at Middlebury College, October 2018

"Searching for Exoplanets with Wellesley's 24" Telescope"

Talk: KNAC Fall 2017 Conference at Wesleyan University, October 2017

ACCEPTED
TELESCOPE
PROPOSALS

James Webb Space Telescope Cycle 2: "Sgr A* as Particle Accelerator: What Drives the Black Hole's Variable IR and X-ray Emission?", 29.88 hr, PI: Joseph Hora (**Co-I: N. M. Ford**)

Gemini North 2023A: "Tick Tock: A Spectroscopic Investigation into an Imminently Merging Supermassive Black Hole Binary Candidate", 7.8 hr, **PI: N. M. Ford**

COMPUTER TIME ALLOCATIONS	Senior Investigator on a NERSC 2021 Allocation, <i>Neutrino Flavor Transformation in Neutron Star Mergers</i> (18 M MPP hours)	
	Co-Investigator on a NERSC 2021 Allocation, <i>Three-dimensional studies of white dwarfs, massive stars, and neutron star systems</i> (30 M MPP hours)	
	Senior Investigator on a BRIDGES/2 2021 Allocation, <i>Neutrino Flavor Instabilities in Neutron Star Mergers</i> (4000 GPU hours)	
TEACHING	Teaching Assistant , McGill University Department of Physics <i>Supervisor: Prof. Katelin Schutz</i>	Aug 2021 – Dec 2021
	Teaching Assistant , Williams College Hopkins Observatory <i>Supervisors: Dr. Steven Souza & Dr. Kevin Flaherty</i>	2017 – 2020
STUDENT RESEARCH SUPERVISION	Marissa Lindon , McGill University (U3) (co-supervised w/Nicholas Vieira)	Jan 2023 – Aug 2023
	Charlotte Garcia , McGill University (U3) (co-supervised w/Nicholas Vieira)	Jan 2023 – Apr 2023
SCIENCE COMMUNICATION	"Black Holes: The Cosmic Vacuum Cleaners", Astronomy On Tap, Montreal, QC	Sept 2023
	"Intro to Science Visualization", Trottier Space Institute Lunch Talk, Montreal, QC	Oct 2022
	"How To Be an Astrophysicist", McGill Bicentennial Space Week, Montreal, QC	May 2022
OUTREACH & INREACH	Science in Space Mentor , TSI and Dell Technologies: Girls Who Game	Oct 2022 – present
	Observatory Guide , McGill Anna I. MacPherson observatory	Sept 2022 – present
	Graduate Seminar Coordinator , TSI	Sept 2022 – present
	AstroMcGill Outreach Coordinator , TSI	Jan 2022 – Aug 2022
	Physics Hackathon Judge , Department of Physics	Nov 2021, 2022
	STEM Mentor , Fab Fem Organization	Mar 2020 – Mar 2021
	Women & Gender Minorities in Physics & Astronomy Co-President , Williams College	2016 – 2020
PROFESSIONAL MEMBERSHIPS	Event Horizon Telescope Collaboration	Aug 2023 – present
	AGN, Time Domain, and Multi-wavelength Working Groups	
	CASTOR Time Domain Science Working Group	2022 – present
	Centre de Recherche en Astrophysique du Québec	2021 – present
	Canadian Astronomical Society	2021 – present
	American Astronomical Society	2020 – present