# Michael Radica | Curriculum Vitae

Ph.D Student - Université de Montréal ☑ radica@astro.umontreal.ca ☑ radicamc.github.io

### **General Information**

Nationality: Canadian

Languages: English (Native), French (Advanced)

 Affiliations: Canadian Astronomical Society (CASCA), Centre de Recherche en Astrophysiqe du Québec (CRAQ), Institute for Exoplanet Research (iREx)

#### **Education**

Université de MontréalMontréal, CANPh.D. Physique2019 - presentMcMaster UniversityHamilton, CANM.Sc. Astrophysics2017 - 2019McMaster UniversityHamilton, CANB.Sc. (Summa Cum Laude) Honours Physics - Co-op<br/>GPA: 11.3/12 equivalent to 94/1002012 - 2017

### Research Experience

Université de Montréal Montréal, CAN

Ph.D. Thesis with Dr. David Lafrenière

2019 - present

Studying atmospheres of exoplanets with JWST as a member of the NEAT project.

McMaster University Hamilton, CAN

M.Sc. Thesis with Dr. Douglas Welch

2017 - 2019

 Developed a novel method to search for light echoes from core-collapse supernovae using the SITELLE instrument on the CFHT.

**Dissertation:** A Search for Supernova Light Echoes in NGC 6946 with SITELLE

#### Canada France Hawaii Telescope

Waimea, USA

Science Intern with Dr. Laurie Rousseau-Nepton

Sept - Dec 2017

 Studied high resolution spectra from NGC 6822, using SITELLE, to quantify variations in dust extinction along different lines of sight.

#### University of Manitoba

Winnipeg, CAN

Research Assistant with Dr. Chris O'Dea

May - Dec 2016

 Preformed analysis of emission from galaxy clusters to understand the connection between a cluster's X-Ray morphology and AGN feedback.

McMaster University Hamilton, CAN

Honours Thesis with Dr. Laura Parker

Sept 2015 - Apr 2016

 Studied the evolution of dark matter haloes comparable in mass to galaxies, within the Bolshoi Cosmological Simulation.

**Dissertation:** On the Segregation of Dark Matter Substructure in Simulations.

Queen's University

Kingston, CAN

Research Assistant with Dr. Judith Irwin

Jan - Sept 2015

Wrote, and implemented python scripts to carry out data analysis, and quality control on radio emission images
of galaxies, for the CHANG-ES Consortium.

#### **Awards and Honours**

o iREx Scholarship (\$1000)	
o Ontario Graduate Scholarship (\$15000)	2019 (rejected)
o McMaster Symposium Day 1 <sup>st</sup> Place Talk	
• NSERC - Canada Graduate Masters Scholarship (\$17500)	2018
o Ontario Graduate Scholarship (\$15000)	
o CUPC 1 <sup>st</sup> Place Astrophysics Talk	2016
o CUPC 1 <sup>st</sup> Place Astrophysics Talk	2015
o McMaster University Dean's List (\$1000)	2013 - 2017
o McMaster President's Award (\$2500)	

All values in Canadian Dollars

#### **Refereed Publications**

1. A Search for Supernova Light Echoes in NGC 6946 with SITELLE Radica, M.C., Welch, D., Rousseau-Nepton, L.

Monthly Notices of the Royal Astronomical Society, 497, 3297 (2020).

2. CHANG-ES XXI. Transport processes and the X-shaped magnetic field of NGC 4217: off-center superbubble structure

Stein, Y., Dettmar, R. -J., Beck, R., Irwin, J., Wiegert, T., Miskolczi, A., Wang, Q. D., English, J., Henriksen, R., Radica, M., Li, J. -T.

Astronomy & Astrophysics, 639, A111 (2020).

### White Papers and Conference Proceedings

1. Exoplanet instrumentation in the 2020s: Canada's pathway towards searching for life on potentially Earth-like exoplanets

Benneke, Bjorn; Cowan, Nick; Rowe, Jason; Marois, Christian; Metchev, Stanimir; Moores, John; Lee, Eve; Boley, Aaron; Doyon, Rene; Cumming, Andrew; Matthews, Jaymie; Lafreniere, David; Strong, Kimberly; Gladman, Brett; Menou, Kristen; Valencia, Diana; Mawet, Dimitri; Cook, Neil James; Ngo, Henry; Albert, Loic; Godin, Paul; Chauhan, Akash; Darveau-Bernier, Antoine; Lee, Junchan; Pelletier, Stefan; Coulombe, Louis-Phillippe; Miles-Paez, Paulo; Marquette, Melissa; Bell, Taylor; **Radica, Michael**; Gerard, Benjamin L.; Ouelette, Nathalie; Dang, Lisa; Naud, Marie-Eve; Moore, Kevin; Lim, Olivia; Wu, Yanqin; Gupta, Prashansa; Bastien, Pierre; Malo, Lison; Gagne, Jonathan; Beauvais, Simon-Gabriel; Cloutier, Ryan; Cadieux, Charles; Talens, Geert Jan; Herman, Miranda; Mann, Christopher; Piaulet, Caroline; Weiss, Lauren; Chan, Jonathan; Speedie, Jessica; Hedgepeth, Josh; Ali-Dib, Mohamad; Ellery, Alex; Lee, Christopher; Thorngren, Daniel; Navarro, Thomas; Nguyen, Giang; Keating, Dylan; Hallatt, Tim

White Paper for the Canadian Long Range Plan 2020

# **Succesful Observing Proposals**

1. A SITELLE Survey for Highly Broadened H-alpha P-Cygni Profiles in NGC 6946 from Core-Collapse Supernova Light Echoes

**Michael Radica**, Douglas Welch, Laurie Rousseau-Nepton CFHT Semester 2018B, PID: 18BC017

#### **Contributed Talks and Posters**

- o Towards a Robust Extraction Algorithm for NIRISS SOSS Spectra\* at Exoplanets 3 (2020)
- NEAT Exploration of Exoplanet Atmospheres\* at the CASCA Annual General Meeting (2020)
- o A Search for Supernova Light Echoes in NGC 6946 with SITELLE\* at the CASCA Annual General Meeting (2019)
- o The Search for Supernova Light Echoes in NGC 6946 at the McMaster Symposium Day (2018)
- o A High Resolution Study of NGC 6822 with SITELLE at the CFHT Fall Colloquium Series (2017)
- The Evolution of Dark Matter Substructure in Simulated Galaxy Clusters at the Canadian Undergraduate Physics Conference (2016)
- Segregation of Dark Matter Substructure in the Bolshoi Simulation\* at the McMaster Honours Thesis Poster Presentation (2015)
- o Studying Radio Haloes of Galaxies with CHANG-ES at the Canadian Undergraduate Physics Conference (2014)
- o Quark Stars and Compact Stellar Remnants at the McMaster Undergraduate Colloquium (2013)

\* denotes a poster presentation

### **Committee Membership**

- o UdeM Representative, CASCA Graduate Student Committee (2020 present)
- o Graduate Student Liaison, UdeM Equity and Diversity Committee (2020 present)

### Workshop and Conference Participation

o Exoplanets 3 (2020)	
o CASCA Annual General Meeting (2020)	
o CASCA Annual General Meeting (2019)	Montréal, CAN
o MkPy Workshop (2017)	Hilo, USA
o Canadian Undergraduate Physics Conference (2016)	Halifax, CAN
o CASCA Annual General Meeting (2016)	Winnipeg, CAN
o Canadian Undergraduate Physics Conference (2015)	Peterborough, CAN

#### **Technical Skills**

- Operating Systems: Linux, OS X
- **Programming:** Python, C++
- o Astronomical Data Processing: CIAO, CASA, IRAF, ds9, ORCS
- Pubic Speaking: I enjoy preparing and giving talks to all audiences, and have presented research at numerous conferences.

# **Teaching and Tutoring**

Teaching Assistant

Université de Montréal (2020 - present)

Marking and presentation of tutorials (en français) for courses including:

- Astrobiologie (Winter 2020)
- Introduction à la Physique Numérique (Fall 2020)

Teaching Assistant

McMaster University (2017 - 2019)

- Marking and presentation of tutorials for courses including:
- Introduction to Physics for Engineers (Winter 2017)
- Planetary Astronomy (Winter 2018, 2019)
- Introduction to Astronomy (Fall 2018)
- The Big Questions in Astronomy (Fall 2018)
- Stellar Structure (Winter 2019)

Certified Tutor

McMaster University (2014 - 2019)

- McMaster Physics Help Initiative (2014 2016)
- McMaster Physics Help Center (Winter 2018)
- Private Tutor (Fall/Winter 2019)

### **Outreach Activities**

- o Montréal Space Science Association iREx Liaison (2020 present)
- o McMaster Co-op Program Alumni Mentor (2020 present)
- o McMaster Physics & Astronomy Graduate Student Mentor (2018 2019)
- o McCallion Planetarium Presenter (2017 2019)
- o McMaster Sidewalk Astronomy (2017 2019)
- o McMaster Fall Preview Lab Tour Guide (2013)