Michael Radica | Curriculum Vitae

Ph.D Student - Université de Montréal
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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 Montréal — **Montréal, CAN**
Ph.D. Physique — *2019 - present*

McMaster University — **Hamilton, CAN**
M.Sc. Astrophysics — *2017 - 2019*

McMaster University — **Hamilton, CAN**
B.Sc. (Summa Cum Laude) Honours Physics - Co-op — *2012 - 2017*
GPA: 11.3/12 equivalent to 94/100

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

- iREx Scholarship ($1000) *2019*
- Ontario Graduate Scholarship ($15000) ..... *2019 (rejected)*
  Awarded to top 2% of graduate students in Ontario.
- McMaster Symposium Day 1^{st} Place Talk *2018*
- NSERC - Canada Graduate Masters Scholarship ($17500) *2018*
  Awarded to <1000 graduate students in Canada.
- Ontario Graduate Scholarship ($15000) *2017*
- CUPC 1^{st} Place Astrophysics Talk *2016*
- CUPC 1^{st} Place Astrophysics Talk *2015*
- McMaster University Dean's List ($1000) ..... *2013 - 2017*
  Awarded to students in the to 5% of their class.
- McMaster President's Award ($2500) *2012*
  Awarded to top 1% of first year students.

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

- *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)
- *A Search for Supernova Light Echoes in NGC 6946 with SITELLE** at the CASCA Annual General Meeting (2019)
- *The Search for Supernova Light Echoes in NGC 6946* at the McMaster Symposium Day (2018)
- *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)
- *Studying Radio Haloes of Galaxies with CHANG-ES* at the Canadian Undergraduate Physics Conference (2014)
- *Quark Stars and Compact Stellar Remnants* at the McMaster Undergraduate Colloquium (2013)

* denotes a poster presentation

Committee Membership

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

Workshop and Conference Participation

- Exoplanets 3 (2020) ..... *Heidelberg, GER*
- CASCA Annual General Meeting (2020) ..... *York, CAN*
- CASCA Annual General Meeting (2019) ..... *Montréal, CAN*
- MkPy Workshop (2017) ..... *Hilo, USA*
- Canadian Undergraduate Physics Conference (2016) ..... *Halifax, CAN*
- CASCA Annual General Meeting (2016) ..... *Winnipeg, CAN*
- Canadian Undergraduate Physics Conference (2015) ..... *Peterborough, CAN*

Technical Skills

- **Operating Systems:** Linux, OS X
- **Programming:** Python, C++
- **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

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