

# Ilana MacDonald

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Date of birth: May 23, 1986  
Citizenship: Canadian

## KEY SKILLS

- Experienced public lecturer and presenter.
- Experienced organizing outreach events.
- Can explain astronomical concepts to children of all age groups.
- Skilled with computer technology including office software, graphic and web design, and programming languages.
- Extensive experience with delegating responsibilities and managing teams.
- Fluent in written and spoken French

## EDUCATION

PhD, Astronomy & Astrophysics  
University of Toronto, Toronto, Ontario  
Defense expected August, 2013  
Dissertation: *The Suitability of Hybrid Gravitational Wave Detectors for Advanced Gravitational Wave Detectors*  
Advisor: Harald P. Pfeiffer

BSc, Physics (Honours)  
Bishop's University, Sherbrooke, Quebec  
Graduated June, 2008

## PUBLIC OUTREACH AND TEACHING EXPERIENCE

### **Public Library Lecture** (January, February 2013)

Toronto Public Library

Title: "From Falling Apples to Ripples in Space-time" (~45-minute lecture about the history of gravity), given to an audience of ~30 people in January 2013 and to ~45 people in February 2013.

### **Public Lecture** (April 2012)

University of Toronto

Title: "From Falling Apples to Ripples in Space-time" (~45-minute lecture about the history of gravity), given to an audience of ~210 people.

**Classroom visit** (February 2013)

Bruce Public School, Toronto

Discussed Astronomy with a kindergarten class (ages 4-5), explaining the different planets in our solar system and answering questions about astronomy.

**Planetarium Presenter** (2010 - Present)

University of Toronto

Duties: Organize planetarium shows for school groups, private parties, and general public, present interactive half-hour to hour-long planetarium shows, give observatory tours with telescope viewing sessions. Have given ~30 shows since planetarium's opening.

**Organizer of the UofT Astronomy Public Tours** (2008 - Present)

University of Toronto

Tasks: Coordinate and train volunteers to operate the telescopes and planetarium; organize advertising (website, posters, media, Facebook, etc.); recruit, prepare, and introduce speakers; organize logistics; maintain contact with the public by phone, email, and in person; organize observing nights for the WWF Earth Hour and other special events.

URL: [uoft.me/astrotours](http://uoft.me/astrotours)

Other details: Monthly tour consisting of a lecture, telescope tour, planetarium shows with regular attendance of 150-200 audience members.

**Interactions with the Media** (June/July 2012)

Radio-Canada

Interviewed in French for a Radio-Canada report on the Transit of Venus and interviewed by Louis Lessard for segments on his radio show pertaining to astronomical events occurring throughout the summer.

**Volunteer for Other Public Events** (2009 - Present)

University of Toronto, Ontario Science Centre (OSC)

- One World, One Sky event at the OSC: All-day festival celebrating history and culture of astronomy with a few hundred attendees. Many activities for kids including space-themed relay race.
- International Year of Astronomy Kick-Off at the OSC: Displays and activities for children celebrating astronomy with ~1000 attendees.
- Organized the UofT Department of Astronomy Science Rendezvous activities: all-day science festival for families with thousands of attendees.
- Helped organize Transit of Venus event at Varsity Stadium: Telescope viewings, solar filter glasses, and planetarium shows for ~6000 attendees.
- Created activity for Let's Talk Science All Science Challenge: astronomy challenge for the Fun House for ~115 grade 6-8 students.

### **Outreach Training** (2011 - Present)

University of Toronto, Ontario Science Centre (OSC)

- Science Journalism course with Dr. Ivan Semeniuk, Chief of Correspondents for Nature (November/December 2012)
- Let's Talk Science Impact Training (November 2012)
- Dunlap Institute Public Speaking Workshop (October 2011)
- Planetarium training at the OSC (September 2011)
- Dunlap Institute Education & Public Outreach retreat (May 2011)

### **Teaching Assistant** (2008 - present)

University of Toronto

Courses:

- AST101 – “The Sun and its neighbours”: tutorial leader (Fall 2009) and marker (Fall 2008)
- AST201 – “Stars and galaxies”: tutorial leader (Winter 2010)
- AST251 – “Life on other worlds”: marker and discussion with students during office hours (Winter 2009)
- Campus Observer: maintaining telescopes and planetarium, and training students on telescopes (Fall 2010 - Present)

### **Public Tour Coordinator for the Bishop's University Astronomical Observatory** (2007 - 2008)

Bishop's University

Tasks: Organizing lectures and observing sessions, operating telescope, creating and maintaining website

## **PUBLICATIONS**

F. Foucart, M.B. Deaton, M.D. Duez, L.E. Kidder, **I. MacDonald**, C.D. Ott, H.P. Pfeiffer, M.A. Scheel, B. Szilagyi, & S.A. Teukolsky. *Black hole-neutron star mergers at realistic mass ratios: Equation of state and spin orientation effects*. arXiv:1212.4810 (2013)

**I. MacDonald**, A. Mroué, H.P. Pfeiffer, M. Boyle, L.E. Kidder, M.A. Scheel, B. Szilagyi, & N. W. Taylor. *Suitability of hybrid gravitational waveforms for unequal-mass binaries*. Phys. Rev. D 87, 024009 (2013)

P. Ajith, et al. *The NINJA-2 catalog of post-Newtonian/numerical-relativity waveforms for non-precessing black hole binaries*. arXiv:1201.5319 (2012)

W. Ngan, J. Harnois-Déraps, U.-L. Pen, P. McDonald, & **I. MacDonald**. *Non-Gaussian errors of baryonic acoustic oscillations*. Mon. Not. Roy. Astron. Soc. 419:2949-2960 (2012)

**I. MacDonald**, S. Nissanke, & H.P. Pfeiffer. *Suitability of post-Newtonian/numerical-relativity hybrid waveforms for gravitational wave detectors*. Class. Quant. Grav. 28:134002 (2011)

T.-J. Zhang, H.-R. Yu, J. Harnois-Déraps, **I. MacDonald**, & U.-L. Pen. *Increasing the Fisher Information Content in the Matter Power Spectrum by Non-Linear Wavelet Weiner Filtering*. Astrophysical Journal. 728, 35 (2011)

A. Edery, N. Graham, & **I. MacDonald**. *3D scalar model as a 4D perfect conductor limit: dimensional reduction and variational boundary conditions*. Phys. Rev. D 79:125018 (2009)

A. Edery & **I. MacDonald**. *Cancellation of nonrenormalizable hypersurface divergences and the d-dimensional Casimir piston*. JHEP 0709:005 (2007)

## CONFERENCES

- American Astronomical Society (AAS) 221<sup>st</sup> Meeting; January 6-10, 2013, Long Beach, CA – Dissertation talk
- 15<sup>th</sup> Annual East Coast Gravity Meeting (EGM); April 20-22, 2012, Syracuse, NY – Oral presentation
- American Physical Society April Meeting (APS); March 31-April 3, 2012, Atlanta, GA – Oral presentation
- American Astronomical Society (AAS) 219<sup>th</sup> Meeting; January 8-12, 2012, Austin, TX – Oral presentation
- CASCA 2011 conference; May 30-June 2, 2011, London, ON – Oral presentation & presentation for grad student EPO session
- Gravitational Wave Physics and Astronomy Workshop (GWPAW); January 25-30, 2011, Milwaukee, WI – Poster presentation
- 20<sup>th</sup> Annual Midwest Relativity Meeting (AMRM); November 5-6, 2010, Guelph, ON – Oral presentation
- Numerical Relativity and Data Analysis 2010 (NRDA); June 23-26, 2010, Waterloo, ON – Poster presentation
- CASCA 2010 conference; May 25-28, 2010, Halifax, NS – Poster presentation & oral presentation for EPO session

## ACADEMIC PRESENTATIONS

- Video seminar for SXS (Simulating eXtreme Spacetimes) collaboration on February 23<sup>rd</sup>, 2011: “Evaluating Errors in Hybrid Gravitational Waveforms”
- Seminar at Bishop’s University on October 14, 2011: “Modeling Ripples in Space-time: How Good do Hybrid Waveforms from Binary Black Hold Interactions have to be?”
- Video seminar for SXS collaboration on May 9, 2012: “The Suitability of Hybrid Waveforms for Advanced Gravitational Wave Detectors”.

## **AWARDS & SCHOLARSHIPS**

### Graduate

- Reinhardt Fellowship, 2010-11
- NSERC CGS-M, 2009-10
- Mary and Ron Martin Graduate Fellowship in Astrophysics, 2009
- University of Toronto Fellowship, 2008-09, 2010-13
- Hogg-Graduate Admission Award, 2008

### Undergraduate

- University Prize in Physics, 2008
- Toto-Naica-Bibu Research Prize, 2008
- Undergraduate Prize in Physics, 2007
- NSERC USRA (Undergraduate Summer Research Award), 2006 & 2007
- Faculty Prize in Physics, 2006
- Bishop's University Memorial Fund Scholarship, 2005-08

## **ADDITIONAL SKILLS & INTERESTS**

- Microsoft Office, social media
- Programming ability in Python and Matlab
- Web and graphic design (Dreamweaver & Photoshop)
- Playing violin and piano
- Knitting and crochet
- Aikido and mixed martial arts