

<b>Contact Information</b>	<p><a href="#">Dunlap Institute for Astronomy and Astrophysics</a>  University of Toronto  Astronomy Building, AB 211  50 St. George st.  Toronto, ON, M5S 3H4 Canada  Canada</p> <p><a href="mailto:vernstrom@dunlap.utoronto.ca">vernstrom@dunlap.utoronto.ca</a>  <a href="http://www.phas.ubc.ca/~tvern">www.phas.ubc.ca/~tvern</a></p>
<b>Research Interests</b>	Extragalactic radio sources, particularly in the $\mu$ Jy and sub- $\mu$ Jy ranges; Galaxy evolution; Deep radio surveys; Diffuse radio emission; Large scale structure; the cosmic radio background
<b>Skills</b>	Model fitting: likelihoods, $\chi^2$ , Bayesian analysis, Monte Carlo Markov Chains; error/uncertainty analysis; covariance/correlation matrices; bootstrap tests; jackknife tests; stacking; Fourier transforms; power spectra; source peak finding; source fitting; confusion analysis; source counts; luminosity functions; SED fitting; radio interferometry data reduction
<b>Employment</b>	<p><a href="#">Dunlap Institute for Astronomy and Astrophysics</a>,  <a href="#">University of Toronto</a>  Postdoctoral Research Associate, 2015 - Present</p>
<b>Education</b>	<p><a href="#">University of British Columbia</a>, Vancouver, Canada  PhD, Astronomy, Sept 2011 - Aug 2015</p> <ul style="list-style-type: none"> <li>• Thesis: <i>The Faint Extragalactic Radio Sky</i></li> <li>• Adviser: <a href="#">Professor Douglas Scott</a></li> <li>• Co-Adviser: <a href="#">Professor Jasper Wall</a></li> </ul> <p><a href="#">University of British Columbia</a>, Vancouver, Canada  MSc, Astronomy, Sept 2009 - Sept 2011</p> <ul style="list-style-type: none"> <li>• Thesis: <i>Contribution to the Diffuse Radio Background from Extragalactic Radio Sources</i></li> <li>• Adviser: <a href="#">Professor Douglas Scott</a></li> <li>• Co-Adviser: <a href="#">Professor Jasper Wall</a></li> </ul> <p><a href="#">University of Minnesota</a>, Minneapolis, MN, United States  BSc, Astrophysics, December 2008</p>
<b>Refereed Journal Publications</b>	<div>Total: 5</div> <div>First Author: 3</div> <ol style="list-style-type: none"> <li>1. The Deep Diffuse Extragalactic Radio Sky at 1.75 GHz  <a href="#">Vernstrom, T.</a>, Norris, Ray P., Scott, Douglas, Wall, J.V.  <i>Monthly Notices of the Royal Astronomical Society</i>, 447 (2015)  doi:<a href="https://doi.org/10.1093/mnras/stu2595">10.1093/mnras/stu2595</a></li> </ol> <div>Citations: 10</div>

2. Deep 3 GHz Number Counts from a  $P(D)$  Fluctuation Analysis  
**Vernstrom, T.**, Douglas Scott, J.V. Wall, J.J. Condon, W.D. Cotton, E.B. Fomalont, K.I. Kellermann, N. Miller, R.A. Perley  
*Monthly Notices of the Royal Astronomical Society*, 404 (2014)  
doi:[10.1093/mnras/stu470](https://doi.org/10.1093/mnras/stu470)  
Citations: **12**
3. Resolving the Radio Source Background: Deeper Understanding through Confusion  
Condon, J.J., Cotton, W.D., Fomalont, E. B., Kellerman, K., Miller, N., Perley, R.A., Scott, D., **Vernstrom, T.**, Wall, J.V.  
*Astrophysical Journal*, 758, 23C (2012)  
doi:[10.1088/0004-637X/758/1/23](https://doi.org/10.1088/0004-637X/758/1/23)  
Citations: **62**
4. Contribution to the Diffuse Radio Background from Extragalactic Radio Sources  
**Vernstrom, T.**, Scott, Douglas., & Wall, J.V.  
*Monthly Notices of the Royal Astronomical Society*, 415 (2011)  
doi:[10.1111/j.1365-2966.2011.18990.x](https://doi.org/10.1111/j.1365-2966.2011.18990.x)  
Citations: **27**

#### Published Conference Proceedings

Total: 2

First Author: 1

1. Astronomy Below the Survey Threshold in the SKA Era  
Zwart, J. + 16 co-authors, **Vernstrom, T.**  
*Proceedings of Science, Proceedings of Advancing Astrophysics with the Square Kilometre Array*, 172 (2015)  
PoS: [AASKA14172](https://arxiv.org/abs/1507.06017)  
Citations: **2**
2. Deep Source-Counting at 3 GHz  
**Vernstrom, T.**, Wall, J.V., Scott, Douglas  
*Proceedings of the International Astronomical Union*, 306, 177-181 (2014)  
doi:[10.1017/S1743921314011053](https://doi.org/10.1017/S1743921314011053)

#### Talks and Posters

Invited Talks: 3

Contributed Talks: 4

Posters: 2

1. **Invited Talk:** SPARCS 2015, Kruger Park South Africa, July 2015  
Title: *MicroJansky Radio Sources: Counts, Confusion, and Catalogues*
2. **Contributed Talk:** 225<sup>th</sup> AAS Meeting; Seattle, WA. Jan 2015  
Title: *The Faint Extragalactic Radio Sky on Small and Large Angular Scales*
3. **Contributed Talk:** Joint UBC/SFU/TRIUMF Cosmology Meeting; Vancouver, CA. Oct 2014  
Title: *The Faint Extragalactic Radio Sky on Small and Large Angular Scales*
4. **Invited Talk:** Colloquium; University of Minnesota, MN, Oct 2014  
Title: *The Faint Extragalactic Radio Sky on Small and Large Angular Scales*

5. **Invited Talk:** KICP High Energy Messengers: Connecting the Non-Thermal Extragalactic Backgrounds; Chicago, IL. Jun 2014  
Title: *The Radio Background: Recent estimates from discrete and extended sources*
6. **Contributed Talk:** Canadian Astronomical Society Meeting (CASCA); Vancouver, CA. May 2013  
Title: *The Deepest View of the Radio Universe at 3 GHz*
7. **Contributed Talk:** The Modern Radio Universe; Bonn, Germany. April 2013  
Title: *The Deepest View of the Radio Universe at 3 GHz*
8. **Poster Presentation:** Cosmology for the Next Generation Winter School; Cancun, Mexico. Jan. 2012.  
Title: *Population of microJy radio sources*
9. **Poster Presentation:** 217<sup>th</sup> AAS Meeting; Seattle, WA. Jan 2011.  
Title: *Contribution to the Diffuse Radio Background from Extragalactic Radio Sources*

### Telescope Proposals

Total: 12

PI: 4

Percent with some fraction of time granted: 75%

Primary-investigator on [1](#) Giant Metrewave Radio Telescope (GMRT) proposal

Primary-investigator on [2](#) Atacama Large Millimeter Array (ALMA) proposals

Co-author on [5](#) Jansky Very Large Array (VLA) proposals

Primary-investigator on [1](#) and Co-Author on [3](#) Australian Telescope Compact Array (ATCA) proposals

### Press Releases

Total: 1

[NRAO Press Release](#) : *VLA Gives Deep, Detailed Image of Distant Universe*, April 2013

### Observing Experience

Observatory	Telescope	Date	Frequency	P.I.
remote obs.	GMRT	May 2014	325 MHz	T. Vernstrom
remote obs.	VLA	Feb 2014	S-Band 2-4 GHz	J. Condon
remote obs.	ATCA	Nov 2013	L-Band 1.1-3.1 GHz	R. Norris
Onsite obs.	ATCA	May 2012	L-Band 1.1-3.1 GHz	R. Norris
remote obs.	VLA	Feb–April 2012	S-Band 2-4 GHz	J. Condon

### Teaching

Years of Teaching Experience: 8

Number of Courses as TA: 10

Guest Lecture, ASTR 309 - Galaxies (2013, 2014)

Guest Lecture, ASTR 311 - Stars and Galaxies For Arts Students (2013)

School	Course Title	Course Type		
		Tutorial	Lab	Marking
UBC	Galactic Astronomy	X		X
	Statistics for Astronomers			X
	History and Philosophy of Physics	X		X
	Stars and Galaxies For Arts Students**	X		X
	Frontiers of Astronomy			X
	Introduction to Stars and Galaxies	X	X	X
	Introduction to the Solar System	X	X	X
	Introductory Physics		X	X
Minnesota	Introduction to Astronomy	X	X	
	Calculus I			X

\*\*Special TA position as part of the Carl Wieman Science Education Initiative,  
<http://www.cwsei.ubc.ca>

## Leadership & Participation

Peer Reviewer for Journals:

- Monthly Notices of the Royal Astronomical Society

Volunteer Judge for undergraduate posters Chambliss Award 225<sup>th</sup> AAS Meeting (2015)

Participant in UBC (Physics and Astronomy) 3 Minute Thesis Competition (2014)

Mentor in Physics and Astronomy UBC mentorship Program (2012-2014)

Member of Canadian Astronomical Society (CASCA) 2013 Meeting Local Organizing Committee (2012-2013)

- Additionally: Lead Volunteer /Volunteer Coordinator

Co-Organizer of the CASCA Graduate Student Workshop (2013)

Judge for Astronomy Talks, Canadian Undergraduate Physics Conference (CUPC) (2012)

Organizer BC Astronomy Winter Retreat (2012)

## Public Outreach

UBC Summer Science Camp: Helped plan astronomy activities and taught groups of elementary school children (summer 2011, 2012, 2013)

Public Lecture: UBC Astronomy Club (March 2012)

Public Observing Nights: UBC (Fall 2009)

Public Observing Nights: University of Minnesota (2007-2009)

Classroom volunteering: Astronomy activities and question and answer sessions

- Multiple Elementary Schools, MN, USA (2006-2008)

## Computer Software

Astronomy Analysis Software:

- CASA, Miriad, AIPS, OBIT, CosmoMC, DS9, Aegean, WCStools, TOPCAT, CIAO/Sherpa, Starlink, Kappa

## Computer Languages:

- Fortran, Python, IDL, shell scripting, C++, Perl

**Workshops,  
Summer  
Schools**

EVLA Data Reduction Workshop; NM, USA. Feb 2012

Essential Cosmology for the Next Generation Winter School; Mexico. Jan 2012

ERIS European Radio Interferometry Summer School; Italy. Sept 2011

Novel Telescopes for 21 cm Cosmology; Canada,. June 2011

ALMA Proposal Workshop; Victoria, Canada. March 2011

**References**

**Dr. Douglas Scott** (e-mail: [dscott@phas.ubc.ca](mailto:dscott@phas.ubc.ca); phone: 604-822-2802

- Professor at the [Department of Physics and Astronomy](#)
- ◇ University of British Columbia; Vancouver, BC, Canada

**Dr. Jasper Wall** (e-mail: [jvw@phas.ubc.ca](mailto:jvw@phas.ubc.ca); phone: 604-822-4269

- Professor at the [Department of Physics and Astronomy](#)
- ◇ University of British Columbia; Vancouver, BC, Canada