

CITA (VIRTUAL) ANNUAL GENERAL MEETING 2020

June 8, 2020



UNIVERSITY OF
TORONTO



CITA
ICAT



NSERC
CRSNG



CITA 2020 ANN MTG AGENDA

1. CITA Inc. and CITA Council
2. CITA Snapshot: Faculty, Staff, PDFs
3. CITA National Activity: National & Canada Fellows
4. CITA Snapshot: grad students
5. CITA Activity – Visitors Long & Short Term & Seminars
6. CITA National Activity – Supported Meetings
7. CITA Activity – Undergrad Researchers & SURP 2019, 2020
8. CITA Activity – Research Team Collaborations
9. CITA Activity – Publications & Awards
10. CITA Activity – the CITA Week +
11. CITA Activity – in the Covid-19 era
12. CITA – Funding Support => Discovery Institutes Support
13. CITAZen Faculty Success – Canada & International
14. Theoretical Astrophysics in Canada & NSERC & the CLRP
15. **CITA Inc - New Membership Applications and Renewals**

Appendix: HPC Computing



CITA Inc Members *Jun 8 2020*

Arif Babul (Victoria) 2020	Kayll Lake (Queen's) 2021
Shantanu Basu (Western) 2020	Denis Leahy (Calgary) 2021
Dick Bond (CITA) 2021	Adrian Liu (McGill) 2023
Robert Brandenberger (McGill) 2022	Catherine Lovekin (Mount Allison) 2022
Avery Broderick (PI/Waterloo) 2022	Margot Mandy (UNBC) 2020
Ray Carlberg (Toronto) 2021	Hugo Martel (Laval) 2020
Paul Charbonneau (Montréal) 2022	Peter Martin (CITA) 2020
Cynthia Chiang (McGill) 2024	Christopher Matzner (Toronto) 2022
Alan Coley (Dalhousie) 2020	Sharon Morsink (Alberta) 2021
Hugh Couchman (McMaster) 2020	Norman Murray (CITA) 2019
Nicholas Cowan (McGill) 2022	Julio Navarro (Victoria) 2019
Andrew Cumming (McGill) 2022	Lorne Nelson (Bishop's) 2021
Neal Dalal (Perimeter) 2023	Rachid Ouyed (Calgary) 2020
Robin Dong (Victoria) 2023	Ue-Li Pen (CITA) 2023
Martin Duncan (Queen's) 2020	Will Percival (Waterloo) 2024
Charles Dyer (Toronto) 2021	Serge Pineault (Laval) 2021
Sara Ellison (Victoria) 2020	Levon Pogolian (SFU) 2022
Rodrigo Fernandez (Alberta) 2023	Dmitri Pogosyan (Alberta) 2023
Mike Fich (Waterloo) 2023	Eric Poisson (Guelph) 2021
Jason Fiege (Manitoba) 2023	Ralph Pudritz (McMaster) 2023
Andrei Frolov (SFU) 2022	Marcin Sawicki (St. Mary's) 2024
Brett Gladman (UBC) 2022	Douglas Scott (UBC) 2023
David Guenther (St. Mary's) 2022	Ian Short (St. Mary's) 2020
Mark Halpern (UBC) 2021	Daniel Siegel (PI/Guelph) 2024
Falk Herwig (Victoria) 2020	Jonathan Seivers (McGill) 2024
Jeremy Heyl (UBC) 2019	Kris Sigurdson (UBC) 2019
Gary Hinshaw (UBC) 2019	Alison Sills (McMaster) 2023
Julie Hlavacek-Larrondo (Montréal) 2022	Glenn Starkman (Case Western) 2020
Eve Lee (McGill) 2024	James Taylor (Waterloo) 2023
Renée Hlozek (UofT) 2021	Robert Thacker (Queen's) 2022
Mike Hudson (Waterloo) 2021	Ludo van Waerbeke (UBC) 2020
Natasha Ivanova (Alberta) 2020	James Wadsley (McMaster) 2023
Doug Johnstone (HIA NRC at Victoria) 2020	Larry Widrow (Queen's) 2020
Matthew Johnson (York) 2022	Paul Wiegert (Western) 2020
Sun Kwok (UBC) 2023	Huan Yang (Guelph) 2024



CITA Council

CITA COUNCIL MEMBERS (2019-2020)

Dick Bond	Director, CITA
Jay Pratt	Vice-Dean, FAS, UofT
Rob Brandenberger	McGill University (2022)
Andrei Frolov	Simon Fraser University (2021)
Julie Hlavacek-Larrondo	University of Montreal (2021)*
Catherine Lovekin	Mount Allison (2023)
James Taylor	Chair, University of Waterloo (2020)**

*CASC rep: 2-year term 2019-2021

**Term expires.

Shantanu Basu of the University of Western Ontario has been elected as the next CITA Council member.

Thanks to James Taylor for his great service, e.g.,

Theoretical Astrophysics in Canada – LRP White Paper

James E. Taylor (Waterloo), J. Richard Bond (CITA), Jo Bovy (Toronto), Robert Brandenberger (McGill), Renee Hlozek (Toronto/Dunlap), Eve Lee (McGill), Christopher D. Matzner (Toronto), Peter G. Martin (CITA), Ue-Li Pen (CITA), Alison Sills (McMaster), Neil Turok (Perimeter), Larry Widrow (Queen's)

POSTDOC RECRUITMENT (171 applications)

– to Council Dec. 2019: “PDF Steady state is higher than 2019-20. so we will be hiring in a big way for 2020-21

From Council rank-ordered list in an extremely competitive market

=> 7+1 CITA Postdoctoral Fellows + 4 CITA National/Canada Fellows



CITA Snapshot - Faculty and Staff

FACULTY

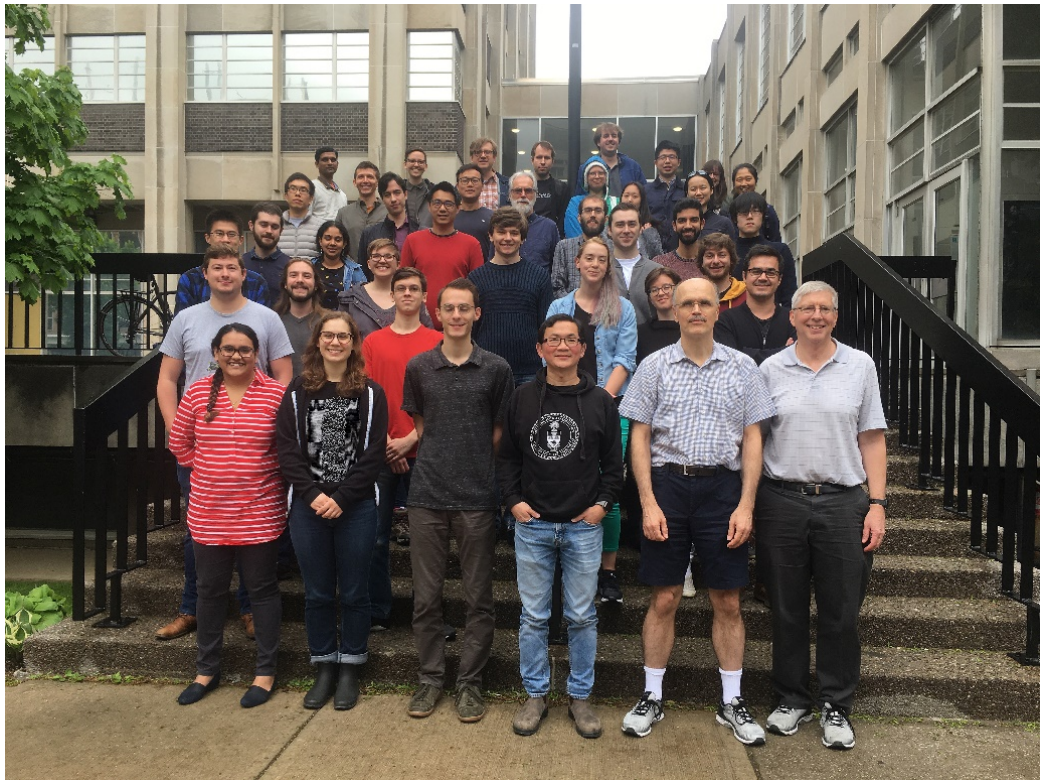
- ▶ **Dick Bond**, Director, past past past Director
- ▶ **Peter Martin** past past past past past Director
- ▶ **Norman Murray**, past past Director
- ▶ **Ue-Li Pen**, past Director
- ▶ **Chris Thompson**
- ▶ **Steady state is 7. We are hiring two+ faculty in 2020-21.**
- ▶ **** Scott Tremaine** IAS -> CITA July 2020 past past past past Director

ADMINISTRATIVE STAFF

- ▶ **Candace Duong**, Business Officer
- ▶ **Jenny Jung**, Administrative Assistant – maternity leave May 2020
- ▶ **=> Amy Chang**, Administrative Assistant – May 2020 -
- ▶ **Jade Shi**, Office and Project Assistant

COMPUTING AND IT STAFF

- ▶ **John Dubinski**, Computing Manager
- ▶ **MJ Huang**, HPC Specialist and System Administrator
- ▶ **Mike Nolte**, CCAT-P Programmer
- ▶ **James Willis**, CHIME-CHIRADA Computing Specialist



Emily
Tyhurst
version

← artist

2020... CITA in the time of Covid-19 zoomers all



CITA Postdoctoral Fellows /SrRAs

NEW RESEARCH FELLOWS/SrRAs starting in academic term 2020/2021

Victoria Calafut, (PhD Cornell University, 2020) CITA
Jennifer Chan, (PhD University College London, 2020) CITA + FAS support/DI 4y
Dongwoo Chung, (PhD Stanford University, 2020) CITA + JRB+ DI 5y
Janosz Dewberry, (PhD University of Cambridge, 2019) CITA
Jose Tomas Galvez Gherzi, (PhD Simon Fraser University, 2019) JRB
Ted Mackereth, (PhD Liverpool John Moores University, 2019) CITA + DI Bovy 5y
Hongming Zhu, (PhD Univ of Chinese Academy of Sciences, 2017) CITA+Pen
Almog Yalinewich, (promotion to SrRA. PhD 2017) CITA

CURRENT FELLOWS/SrRAs

Jonathan Braden (2018)
Katelyn Breivik (2018)
Patrick Breysse (2017)
Sarah Gossan (2019)
Nina Gusinskaia (2019)
Jose Miguel Jauregui Garcia (2016)
Laura Keating (2017)
Xinyu Li (2019)
Hsiu Hsien Lin (2018)
Jing Luo (2018)
Antoine Marchal (2019)
James McKee (2017)
Pavel Motloch (2018)
Hamsa Padmanabhan (2018)
Almog Yalinewich (2017)
JJ (John) Zanzizzi (2018)
Wei Zhu (2017)

POSTDOCS LEAVING IN SEPTEMBER...

Katie Breivik, Flatiron Institute, Postdoc
Patrick Breysse, NYU Center for Cosmology and Particle Physics, Postdoc
Laura Keating, Leibniz-Institut für Astrophysik (Germany)



CITA Postdoctoral Fellows /SrRAs

POSTDOCS /SrRAs WHO LEFT TO TAKE ON NEW ACADEMIC POSITIONS

Cristobal Petrovich, Steward Observatory, U. of Arizona, Postdoc

Simon Foreman, Perimeter Institute, Postdoc

Viswesh Marthi, Tata Institute, India, Faculty

Alex van Engelen, Arizona State University, Faculty

Xin Wang, Sun-Yat Sen University, Faculty

Tova Yoast-Hull, Chalmers University of Technology, Postdoc

Haoran Yu, Xiamen University, Faculty

65% of former CITA postdocs and researchers are in permanent academic or research positions – including recent CITAzers now Asst Profs

19% are in postdoc and research positions poised for faculty positions (includes current CITA postdocs)

16% have left academia –with very successful outcomes, data science etc.

SUPPORT FOR VISITS BY CITA FELLOWS to Canadian Universities

- ▶ Aim of this program is to promote professional interactions within the Canadian theoretical astrophysics community
- ▶ Helps defray the travel costs of CITA researchers who are invited to visit Canadian universities outside of Toronto
- ▶ Please contact CITA if you are interested in having a CITA postdoc give a talk at your Institute



CITA National Fellows

CITA NATIONAL/CANADA FELLOWSHIPS

National Fellows are postdoctoral fellows who have been nominated by a Canadian University and then selected by the CITA Council. The selection process is as rigorous as that for CITA research fellows.

Since the start in 1988, we have awarded 92 National Fellows.

CITA provides 50% of the stipend up to \$66,000 for 2 years, plus up to \$6,000 in research expenses. The remainder is provided by the host university. National Fellows are encouraged to visit CITA for extended periods of time.

2020 is the second year of a pilot CITA Canada fellowship, where fellows spend the first 2 years at a Canadian host institution, followed by 2 years at CITA. Tried various approaches this year as the recruitment season unfolded.

INCOMING

- ▶ **Suddhasattwa Brahma**, McGill, nominated by Robert Brandenberger
- ▶ **Denis Gonzalez**, UBC, nominated by Jeremy Heyl / D Scott – + Killam 5y
- ▶ **Lukas Hergt**, UBC, nominated by Jeremy Heyl
- ▶ **Marta Reina Campos**, McMaster, nominated by Alison Sills ([Canada Fellowship](#)) 5y

CURRENT

- ▶ **Zhuo Chen**, University of Alberta, nominated by Natasha Ivanova
- ▶ **Jordan Mirocha**, McGill University, nominated by Adrian Liu
- ▶ **Raphael Errani**, University of Victoria, nominated by Julio Navarro
- ▶ **Seughwan Lim**, UBC, nominated by Douglas Scott ([Canada Fellowship](#)) 4y



CITA Graduate Students

Are enrolled in either In the Physics Department or DADDAA 20, 6 women

Daniel Baker, (Physics) Supervised by Ue-Li Pen
Nate Carlson, (Physics) Supervised by Dick Bond
Jibran Haider, (Astronomy) Supervised by Dick Bond
Fergus Horrobin, (Astronomy) Supervised by Norm Murray
Shenglin Jing, (Astronomy) Supervised by Chris Thompson
Dylan Jow, (Physics) Supervised by Ue-Li Pen
Alexander Kostenko, (Astronomy) Supervised by Chris Thompson
Alex Lague, (Astronomy) Supervised by Dick Bond/Renee Hlozek
Fei Li, (Astronomy) Supervised by Norm Murray
Dongzi Li, (Physics) Supervised by Ue-Li Pen
Fangxi Li, (Physics) Supervised by Ue-Li Pen
Martine Lokken, (Astronomy) Supervised by Dick Bond /Renee Hlozek
Thomas Morrison, (Physics) Supervised by Dick Bond
Alysa Obertas, (Astronomy) Supervised by Norm Murray
Thierry Serafin Nadeau, (Astro) Supervised by Ue-Li Pen/M. van Kerkwijk
Dana Simard, (Astronomy) Supervised by Ue-Li Pen => Caltech PDF
Ayushi Singh, (Astronomy) Supervised by Peter Martin
George Stein, (Astronomy) Supervised by Dick Bond => Berkeley PDF
Emily Tyhurst, (Physics) Supervised by Ue-Li Pen
CJ Woodford, (Physics) Supervised by Norm Murray
Hanbo Wu, (Physics) Supervised by Norm Murray
Jonathan Zhang, (Physics) Supervised by Chris Thompson

A number of other CITA grad students finished this year and are off to PDFs etc.

the PDF-rich environment plus the faculty, graduate students and large stream of visitors for short and longer stays, and the number of semi-formal and informal talks, makes CITA a superb place to experience astronomical growth.

Shared grad students CITA, DAA, DI, Physics and PI (cross apptments)

CITA profs also supervise smaller-scale grad student projects before the grad students settle on a supervisor for PhD. e.g., Ay 1501



CITA Activity - Visitors & Seminars

CITA VISITOR PROGRAM A vigorous program bringing ~150 astro and physics researchers from abroad and Canadian Universities for both extended stays and shorter visits.

Total Visitors 2019: 151 – most giving seminars/talks. two seminars per week (75 in 19) + informal group meetings. All seminars can be viewed on the CITA website.
Female Visitors: 21. **Canadian Visitors:** 64

CITA WEBCASTING: Archives of webcasts and slides accessible at CITA seminar page and through the CITA YouTube channel, **Now zoom-recorded**

Long-Term Visitors:

Dagoberto Contreras (York University)
Neal Dalal (Perimeter Institute)
Mike Fich (University of Waterloo)
James Mertens (York University)
Mathew Madhavacheril (Perimeter Institute)
Elena Massara (University of Waterloo)
Lorne Nelson (Bishop's University)
Fereshteh Rajabi (Perimeter Institute)
Yuanbo Xie (Beijing Normal University)
Adam Hincks (CITA – now UofT faculty, joint St. Mikes College/DADDAA)

Recent sabbatical visitors and extended faculty visits:

2018-19	Tom Quinn (University of Washington) Simon Portegies-Zwart (University Observatory Munich)
2017-18	Shude Mao (Tsinghua University)
2016-17	Shantanu Basu (University of Western Ontario)
2014-15	Eric Poisson (University of Guelph) Margot Mandy (University of Northern British Columbia)
2013-14	Carlo Contaldi (Imperial College)
2012-13	Andrei Frolov (Simon Fraser University) Maxim Lyutikov (Purdue University)

Senior Visiting Fellows Program: *provides partial funding to support stay - teaching and administrative release or sabbatical top-up. The Fellow is spends a minimum of 50% of the supported time in residence at CITA.*



CITA National - Supported Meetings

FRB Day, Nov 30, 2018, CITA (Organizers: Ue-Li Pen, Hsiu-Hsien Lin)

Cdn Conf for Undergrad Women in Physics (CCUWiP)

January 18-20, 2019, University of Ottawa (Organizer: Ras-Jeevan Obhi)

Testing Gravity 2019, January 24-26, 2019, SFU (Organizer: Levon Pogosian)

AstroTours Earth Hour,

March 30, 2019, University of Toronto (Organizer: Alys Obertas)

CITA/PI Day, April 2, 2019, CITA/Perimeter Institute (Organizer: Alex van Engelen)

FRB Day, June 6, 2019, CITA (Organizers: Ue-Li Pen, Hsiu-Hsien Lin)

CASCA 2019, June 17-21, 2019, McGill University (Organizer: Emmanuel Fonseca)

Women in Physics (WIPC),

June 25-28, 2019, McGill University (Organizer: Hope Boyce)

Space Climate 7 Symposium,

July 8-11, 2019, Orford, Quebec (Organizer: Paul Charbonneau)

AstroTours Keynote Lecture, September 26, 2019, UofT

CITA/PI Day, November 1, 2019, CITA/Perimeter Institute

Canadian Undergrad Physics Conference (CUPC) November 7-10, 2019, McGill

Cdn Conf for Undergrad Women in Physics (CCUWiP)

January 17-19, 2020, University of Toronto

AstroTours Earth Hour, March 28, 2020, University of Toronto

CASCA 2020, May, 2020, York – virtual zoom meeting (Organizer: Delaney)

Other conferences after March 2020 have been cancelled or postponed.

Note: only main organizer or the person who contact CITtA for funding is listed



CITA Activity – Predoctoral Fellows

CITA PREDOCTORAL PROGRAM

Every year we invite Masters and PhD students to spend short periods of time at CITA, typically for 2-6 months. Candidates come with some of their own funding, subsidized by professor grants. These visits benefit both the students and CITAzens. Recent predocs include:

Yuxuan Yuan, Australian National University, January to February 2020

Hengrui Zhu, Oberlin College and Conservatory, May to August 2019

Jaafar Chakrani, École Polytechnique, April to August 2019

Yuanbo Xie, Beijing Normal University, April to June 2019

Marc van den Bossche, École Normale Supérieure, Feb to July 2019

Kai Wu, Nankai University, July to October 2018

Mingze Sun, Nankai University, July to October 2018

Furen Deng, Nanking University, July to October 2018

Rémi Mourgues, École Polytechnique, March to August 2018

Bruno Régald-St Blancard, École Polytechnique, April to July 2017

Brice Bakkali-Hassani, École Polytechnique, April to July 2017

Qiaoyin Pan, Nanking University, June to Dec 2016/ Feb to May 2017

Emma Platts, University of Capetown, May 2016 to Aug 2015

Hongming Zhu, NAO in Beijing, July 2015 to Aug 2015

Shifan Zuo, NAOC, May 2015 to June 2015

Alban Farchi, École Polytechnique, April 2014 – August 2014

Jing Luan, Caltech, April 2014 – May 2014

Anh Nguyen, U. of Science and Technology, Hanoi, April 2014 – June 2014

Valentin Goblot, École Polytechnique, April 2013 – July 2013

Yu Yu, Shanghai Observatory, August 2012 – Feb 2013

Gwendoline Stephan, University of Paris, March – June 2012

Susana Valdez-Alvarado, University of Guanajuato, March – August 2011

Haoran Yu, Beijing Normal University, January 2011 – August 2012



CITA ACTIVITY – UG + SURP 2019

SUMMER Undergraduate RESEARCH STUDENTS 2019

Summer 2019: there were **12** CITA summer students, including **5 + 1** (Physics) who have won the NSERC Undergraduate Summer Awards and **2** Mitacs Awards. The students work with faculty and postdoctoral fellows, often in collaborative groupings.

We coordinate SURP across all-UofT-astronomy, very lively and productive.

NSERC

- ▶ Daniela Breitman (Ue-Li Pen)
- ▶ Matthew Bub (Cristobal Petrovich)
- ▶ Clara Chung (Alex van Engelen)
- ▶ Henry Rui Han Liu (Patrick Breysse)
- ▶ Jessica Speedie (JJ Zanazzi)
- ▶ Qing Hao Xu (Ue-Li Pen)

NON-NSERC

- ▶ Erik Gillis (Pavel Motloch)
- ▶ Numa Karolinski (Wei Zhu)
- ▶ Michael Poon (JJ Zanazzi)
- ▶ Andrey Removrov (Almog Yalinewich)

MITACS

- ▶ Jaemyoung Jason Lee (Dick Bond)
- ▶ Hengrui Zhu (Ue-Li Pen)

CTA200H – Astrophysical Computing

Computing course attended by all summer students.

Instructor: Norm Murray + CITA PDF contributors/coordinators

UofT UG Reseech Students during the academic year – e.g., Ay 430



CITA ACTIVITY – UG + SURP 2020

SUMMER Undergraduate RESEARCH STUDENTS 2020

Summer 2020: there are **10** CITA summer students, including **2** who have won the NSERC Undergraduate Summer Awards. The students work with faculty and postdoctoral fellows, often in collaborative groupings.

We coordinate SURP across all-UofT-astronomy, very lively and productive. CITAZen Patrick Breysse Chairs the 2020 SURP committee.

COVID-19 = all interactions are via zoom. We decided to go ahead in spite of the complications, and it is working well.

NSERC

- ▶ Sarah Thiele (Katie Breivik / Norm Murray)
- ▶ Clara Chung (Dick Bond / Patrick Breysse)

NON-NSERC

- ▶ Henri Lamarre (Laura Keating)
- ▶ Xiaoyi Ma (Wei Zhu)
- ▶ Kuunal Mahtani (Ue-Li Pen)
- ▶ Michael Poon (JJ Zanazzi)
- ▶ Yeshan Ethan Sun (Almog Yalinewich)
- ▶ Mukesh Taank (Peter Martin)
- ▶ Parasar Thulasirum (Hsiu-Hisen Lin)
- ▶ Lechun Xing (Jonathan Braden)

CTA200H – Astrophysical Computing

Computing course attended by all summer students – via Zoom.
Instructor: Norm Murray + CITA PDF contributors/coordinators

UofT UG Reseearch Students during the academic year – e.g., Ay 430



CITA Activity – Team Collaborations

RESEARCH COLLABORATIONS

CITA faculty, research fellows and grad students are engaged in numerous international and Canadian collaborations.

Current collaborations include:

- ▶ **Advanced ACTpol** (Bond, van Engelen, Stein, Lokken)
- ▶ **ACTpol** (Bond, van Engelen, Nolta, Stein, Lokken)
- ▶ **Algonquin Radio Observatory Experiments** (Pen, Marthi, Simard, Li, Main, Lin, Amaral)
- ▶ **BFore** (Bond)
- ▶ **BLAST-TNG** (Martin)
- ▶ **CCATp Telescope** (Murray, Bond, Stein, van Engelen, Keating)
- ▶ **CHIME 21cm Cosmology** (Pen, Bond, Nolta, Berger)
- ▶ **CHIME Fast Radio Burst Experiment** (Pen)
- ▶ **CHORD 21cm Cosmology & FRBs** (Bond, Pen)
- ▶ **CMB Stage-4** (Bond, Stein, van Engelen)
- ▶ **COMAP** (Bond, Murray, Breysse, Keating, Stein)
- ▶ **Dragonfly** (Martin)
- ▶ **Euclid** (Bond, Stein)
- ▶ **GAS on GBT** (Martin, Singh)
- ▶ **GBT-Parkes-IM-FRB** (Pen, Breysse)
- ▶ **Herschel Space Observatory** (Martin, Singh)
- ▶ **KEYSTONE on GBT** (Martin, Singh)
- ▶ **JWST/NIRCam** (Martin)
- ▶ **Planck** (Bond, Martin)
- ▶ **Simons Observatory** (Bond, Stein, van Engelen)
- ▶ **Spider** (Bond, Nolta, Shariff)
- ▶ **TianLai** (Pen)
- ▶ **TianNu** (Pen, Yu)
- ▶ **VLBI+radioastron** (Pen, Main, Simard, Marthi, Li, Lin, Amaral)



CITA Activity - Publications & Awards

SCIENTIFIC PUBLICATIONS: Researchers at CITA published or submitted over **137 papers in 2019.**

FACULTY AWARDS

- ▶ **Dick Bond:** 2020 Inaugural Fellow of the American Astronomical Society
- ▶ **Dick Bond and Peter Martin: 2019** Giuseppe and Vanna Cocconi Prize (European Physical Society) to the WMAP and Planck Collaborations
- ▶ **Ue-Li Pen:** Simons Investigator in Astrophysics; Humboldt Award
- ▶ **Chris Thompson:** Royal Society of Canada Fellow

VINCENT & BEATRICE TREMAINE FELLOWSHIP

Endowed award given annually for outstanding research to a current CITA research fellow.

2020: **Laura Keating**
2019: **Almog Yalinewich**
2018: **Wei Zhu**
2017: **Alex van Engelen**
2016: **Joel Meyers**
2015: **Zhiqi Huang**
2014: **Aaron Zimmerman**
2013: **Francois Foucart**
2012: **Shane Davis**
2011: **Avery Broderick**
2010: **Jens Chluba**
2009: **Neal Dalal**
2008: **Patrick McDonald**
2007: **Natasha Ivanova**
2006: **Michael Nolte**
2005: **Jonathan Sievers**
2004: **Carlo Contaldi**
2003: **Yuri Levin**
2002: **Andrei Beloborodov**
2001: **Henk Hoekstra**
2000: **Nir Shaviv**
1999: **Dmitri Pogosyan**

JEFFREY L. BISHOP FELLOWSHIP

Jeff was one of the first CITA postdocs. He died tragically while jogging shortly after leaving CITA. In his memory, his mother gives a donation biennially.

2019: **Katie Breivik**
2017: **Cristobal Petrovich**
2015: **Dan Tamayo**
2013: **Marcelo Alvarez**
2011: **Carlos Palenzuela**
2009: **Matt Browning**
2007: **Yoram Lithwick**
2005: **Jonathan Dursi**
2003: **Matthias Liebendorfer**
2001: **Yanqin Wu**
1999: **Phil Arras**
1997: **John Dubinski**
1995: **Kevin Rauch**
1993: **Janna Levin**
1991: **Gerry Quinlan**
1990: **Konrad Kuijken**



CITA Activity – the Weekly++

~ 150 visitors per year !!

SEMINAR SERIES Monday 3, Thursday 2

BLACKBOARD TALK SERIES Tuesday noon

interactive and pedagogical

COSMOLOGY DISCUSSION aka COSMO LUNCH Friday 12.30

.STARS AND PLANETS DISCUSSION biweekly

PULSAR COFFEE weekly

SCINTILLOMETRY GROUP Joint CITA-Dunlap-DAA collaboration

ASTRO-PH COFFEE Twice weekly, alternates astro-CITA

CITA DESSERT. Friday 4PM

Astronomy Colloquium Wednesday

Physics Colloquium Thursday

CITA/PI days, once a term.

Toronto – PI van twice a week

Then there are the roving conversations all over the CITA floors.

CITA Jamboree - yearly



CITA Activity - in the Covid-19 era

Since the University shutdown in mid-March we have successfully transitioned most of our weekly events and talks online, including an interactive virtual Friday dessert! We are constantly testing out new formats and ideas to increase interaction and productivity in the Zoom era.

CITA Seminar: <https://zoom.us/j/606057005>

Scintillometry: <https://zoom.us/j/92795408657>

Blackboard Talks: <https://zoom.us/j/808986510>

AstroPH Coffee: <https://dunlap.zoom.us/j/907111867>

Murray Group Meeting: <https://zoom.us/j/200012266>

Pulsar Coffee: <https://zoom.us/j/86432772452>

Cosmology Discussion: <https://zoom.us/j/5225035464>

CITA Desserts: <https://zoom.us/j/421230854>

+ innumerable research zooms: pdfs+grad students + undergrad student researchers (SURP, Ay 430,..)

CITA Events Calendar

	Monday	Tuesday	Thursday	Thursday	Friday
9:30 AM					Pulsar Coffee
10:00 AM		Scintillometry MP 15th Floor Conf Room	AstroPH Coffee AB Lounge (10:30 to 11:00)		MP 15th Floor (9:30 to 10:30)
11:00 AM					MONGOOSE MP 1318A
12:00 AM		Blackboard Talks MP 1318A			
1:00 PM				Murray Group Meeting MP 15th Floor Conf Room (12:30 to 1:30)	Cosmology Discussion MP 15th Floor Conf Room (12:30 to 2:00)
2:00 PM	Astro Tea AB Lounge			CITA Seminar MP 1318A	
3:00 PM	CITA Seminar MP 1318A		Astronomy Colloquium AB 107	Postdoc-a-palooza AB Lounge (3rd Thursday of every month)	
4:00 PM				Physics Colloquium MP 102	CITA Desserts



CITA - Funding Support => DIS

CITA Inc. and NSERC

DIS: Discovery Institutes Support, a new NSERC competitive program to support the Institutes: CITA, Fields, CRM, PIMS, BIRS, ARMS, CANSSI (*statistics inst*)

Proposal due November 2021 – extension of one year because of COVID-19 uncertainties re funding and changed world. cf. Nov 2020: delay good for CITA and the Math Institutes

History of NSERC Support: Special Program to Collaborative Special Program to Institute Grant (as with the 3 Math Institutes, Fields, CRM, PIMS) tied in with 4 year NSERC Reallocation (1999-2003, 2003-07)

Institute Grants under Major Research Support (2008-2012) and again from 2012-2015. The MRS program was suspended in 2013. NSERC created the Canadian Institute for Theoretical Astrophysics Support Program, CITA as a stand alone “line item”. Math Institutes were together under one umbrella related to Math Discovery Grants. CITA’s current grant is for five years (2016-2021), now extended to 2022.

Faculty of Arts and Science @ UofT – the largest investment in CITA

Institute in the School of Graduate Studies, 1986-2005

Institute in the Faculty of Arts & Science, July 2005 – current: EDU-A

Other Support

CRC, CFI (3 active grants), Ontario (OCE, ORF-RE, SOSCIP: \$3M in active funding), NSERC RPP, External Fellowships for PDFs, CSA, Simons Foundation, CIFAR, and other targets of opportunity.



CITazen Faculty Success

**CITazens in permanent astro faculty-level positions:
121 faculty + 27 staff scientists**

CITA PDF ALUMNI in faculty positions in Canada

Arif Babul, University of Victoria

Shantanu Basu, University of Western Ontario

Latham Boyle, Perimeter Institute

Avery Broderick, Perimeter Institute/University of Waterloo

Matt Choptuik, University of British Columbia

Hugh Couchman, McMaster University

Neal Dalal, Perimeter Institute

Jason Fiege, University of Manitoba

Andrei Frolov, Simon Fraser University

Brett Gladman, University of British Columbia

Natasha Ivanova, University of Alberta

Doug Johnstone, Senior Research Officer, NRC, HIA

Christopher Matzner, University of Toronto

Lorne Nelson, Bishop's University

Dimitri Pogosyan, University of Alberta

Jonathan Sievers, McGill University

Christopher Thompson, CITA, University of Toronto

Ludo van Waerbeke, University of British Columbia

Larry Widrow, Queen's University

Yanqin Wu, University of Toronto

CITA NATIONAL FELLOWS in faculty positions in Canada

Mike Hudson, University of Waterloo

Rob Thacker, Saint Mary's University

Rachid Ouyed, University of Calgary

James Wadsley, McMaster University

Paul Wiegert, University of Western Ontario

CITA GRADUATE STUDENTS in faculty positions in Canada

Eve Lee, McGill University

Margot Mandy, University of Northern British Columbia

James Wadsley, McMaster University

***Plus more that were CIFAR Cosmology & Gravity Program Fellows,
1986-2017. Now Gravity and the Extreme Universe. 2017-2022+***



Theoretical Astrophysics in Canada – LRP White Paper

James E. Taylor (Waterloo), J. Richard Bond (CITA), Jo Bovy (Toronto), Robert Brandenberger (McGill), Renee Hlozek (Toronto/Dunlap), Eve Lee (McGill), Christopher D. Matzner (Toronto), Peter G. Martin (CITA), Ue-Li Pen (CITA), Alison Sills (McMaster), Neil Turok (Perimeter), Larry Widrow (Queen's)

Theory plays an essential role in astrophysics, both in planning and motivating observations or experiments and in extracting deeper understanding from their findings. As investment in observational infrastructure grows, deliberate (co-)investment in theory should keep pace. Canada has established a particularly strong reputation in theoretical astrophysics, with leadership in many fields, and with institutions and programs of international stature. We propose strategic ways to build on these strengths so that the investments across astronomy recommended in the LRP reach their full potential.



Theoretical Astrophysics in Canada & NSERC & the CLRP

ANY investment in observational infrastructure should have a component supporting theory. Broad theory should underpin the large Cdn astro investments.

Discovery Grant support for theory is down over time. NSERC has not looked at the statistics of theory decline in astro theory and more broadly in theoretical physics, at least the parts not under the Institute for Particle Physics.

US theory is valued theoretically but not monetarily, in spite of strong words in the past few US decades. The best possibilities for grants are for programmatic theory / data analysis in aid of large experimental projects such as LSST, the CMB experiments, space experiments, etc. **"Pure" theory has a harder time. This gave and gives Canada a way to punch above its weight – the theoretical sciences give better price/performance than experiment/observation. DIS covers theoretical sciences.** Also Perimeter, Macdonald Astroparticle, & etc.

LRP needs to strongly endorse theory. theory in NSERC & beyond

There was only one theory presentation at the LRP Town Halls – in Toronto in Fall 2019 by James Taylor, and only because of a strong theory lobby. The time allotted was truncated relative to the other areas.

LRP draft theory recommendation at CASCA 2020 was not in line with what was in the Theory White paper nor the Town Hall => unclear decision-making process to come to these draft recommendations – who beyond the LRP writing committee was consulted?

CITA's November 2021 Discovery Institutes Support proposal will strongly emphasize an enhanced National Program as well as CITA-Toronto, subject to NSERC-DIS guidelines for DIS and available funding - capped in the DIS program. The ideas will be outgrowths of consultation with CITA Inc and CITA Council, and other Canadian institutional entities over the next half year, and will have strong direction from the vision of the new CITA Director we are recruiting.

We are open to all ideas. After 35 years CITA is still experimenting.

