

CITA Canadian Institute for
Theoretical Astrophysics



INCORPORATED 1986

Institut canadien
d'astrophysique théorique **ICAT**

ANNUAL GENERAL MEETING

2007

AGENDA

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- 2. CITA Current Snapshot**
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- 6. CITA Activity**
 - a. CITA Exchange Programs
 - b. Sackler Lecture
 - c. Meetings Supported in 2006-2007
 - d. Awards
- 7. New Membership Applications
Renewal of Membership**

1. Highlights 2006-2007

PERSONNEL

- **Dick Bond** stepped down as Director after two five-year terms.
- **Norman Murray** as new Director (started July 1, 2006)
- **Lev Kofman** as Associate Director
- **Roman Rafikov** has accepted an offer from Princeton; will stay at CITA until Fall 2007

RECRUITING

- **4** PDFs/SRAs and **2** CITA National Fellows recruited in 2007/2008
- **10** PDFs/SRAs and **2** CITA National Fellows recruited in 2006/2007
- **9** PDFs/SRAs and **2** CITA National Fellows recruited in 2005/2006

AWARDS

- **Bond**: 2006 Gerhard Herzberg Gold Medal; 2007 Killam Prize
- **Kofman**: 2006 Alexander von Humboldt Fellowship
- **Murray**: 2007 Fellow, American Physical Society

COMPUTING

- **SciNet**: \$30,000,000 to UofT, \$3,000,000 to Astrophysics, 10,000+ cpu machine
- **CFI**: \$500,000 2000cpus

OTHER HIGHLIGHTS

- September 2006: CITA moved from 1 floor to 2 floors (doubled our space)
- FAS External Review
- MRS Grant – Successful!
- CIAR Renewal

2. CITA Current Snapshot

NEW RESEARCH FELLOWS (Sept 2007)

181 applications for positions

- **BLAGRAVE, Kevin**, PDF, Ph.D. University of Toronto, 2006, Thesis supervisor: P. Martin. Research area: Interstellar Medium
- **BRAITHWAITE, Jonathan**, PDF, Ph.D. University of Amsterdam, 2004. Thesis supervisor: H. Spruit. Research area: Magnetic fields in stars
- **BOYLE, Latham**, PDF, Ph.D. Princeton, 2006. Thesis supervisor: P. Steinhardt. Research area: Theoretical Cosmology
- **CHANG, Tzu-Ching**, PDF, Ph.D. Columbia University, 2003. Thesis supervisor: D. Helfand. Research area: Cosmology
- **FISCHERA, Joerg**, PDF, Ph.D. University of Heidelberg, 2003. Research area: Interstellar medium
- **FRANCE, Kevin**, PDF, Johns Hopkins, 2005. Thesis supervisor: P. D. Feldman. Research area: Interstellar medium
- **JAPPSSEN, Anne-Katrina**, PDF, Ph.D. Potsdam University, Germany. 2005. Thesis supervisor: R. Klessen. Research area: Star Formation
- **MENARD, Brice**, Sr. RA, Ph.D. Max Planck Institut, 2002. Thesis supervisor: M. Bartelmann, Y. Mellier. Research Area: Extragalactic astrophysics, Cosmology
- **NISSANKE, Samaya**, PDF, Ph.D. Institut d'Astrophysique de Paris, 2006. Thesis supervisor: L. Blanchet. Research area: Astrophysical and Theoretical aspects of gravitational wave astronomy
- **YOUDIN, Andrew**, PDF, Ph.D. University of California, Berkeley, 2003. Thesis supervisor: F.H. Shu. Research area: Planet Formation

CITA Current Snapshot...

TO PERMANENT POSITIONS:

- **MAJUMDAR, Subhabatra**, PDF, faculty position in the Dept. of Science and Technology, Tata Institute for Fundamental Research (January 2007)

TO OTHER POSITIONS:

- **EVERETT, John**, to the Dept. of Physics Department, University of Wisconsin at Madison as a PDF (Summer 2006)
- **MORI, Kaya**, to Dept. of Astronomy & Astrophysics, UofT as a PDF (Fall 2006)
- **PODOLSKY, Dimitry** to Helsinki Physics Institute as a PDF (Fall 2006)
- **HUMBLE, Robin**, to Canberra
- **EL-ZANT, Amr**, Journalism in Egypt
- **THOMMES, Ed**, to Northwestern University, Dept. of Physics and Astrophysics as a PDF (January 2007)
- **DUFAUX, Jean-Francois**, to the Institute for Theoretical Physics / Instituto de Fisica Teorica, Madrid as a PDF (Fall 2007)
- **ILIEV, Ilian**, to the University of Zurich as a PDF (Fall 2007)
- **FRANCE, Kevin** to the University of Colorado as a Research Associate (Fall 2007)

75% of former CITA research associates are in permanent academic or research positions (89)

14% are in PDF positions poised for faculty positions (includes current PDFs at CITA)

11% have left the field – most are in industry

CITA Current Snapshot...

INCOMING RESEARCH FELLOW (September 2008)

- **BARNABY, Neil**, PDF. Ph.D. McGill University, 2007. Research area: high energy theory
- **BRODERICK, Avery**, SRA. Ph.D. Caltech, 2004. Research area: compact object physics and star formation
- **CHELOUCHE, Doron**, PDF. Ph.D. Tel-Aviv University, 2007. Research area: quasars and galaxies
- **COMPIEGNE, Mathieu**, PDF.

CITA Current Snapshot...

CITA Faculty		
<i>Stanford University</i>	BOND, Dick (CMB, LSS, early universe)	
<i>University of Hawaii</i>	KOFMAN, Lev (Early Universe, LSS)	
<i>University of Toronto</i>	MARTIN, Peter Martin (ISM)	<i>Chair, UofT DA + CITA</i>
<i>Caltech</i>	MURRAY Norm (Solar System, AGN)	<i>Canada Research Chair Tier I</i>
<i>Harvard University</i>	PEN, Ue-Li (LSS, Hydro)	
<i>Princeton University</i>	RAFIKOV, Roman (Planetary, High Energy)	<i>Canada Research Chair Tier II</i>
<i>University of North Carolina</i>	THOMPSON, Chris (High Energy)	

PDFs / SRAs		
<i>UofT</i>	BLAGRAVE, Kevin	
<i>Princeton University</i>	BOYLE, Latham	
<i>Max Planck Institute</i>	BRAITHWAITE, Jon	
<i>UC Berkeley</i>	CHANG, Tzu Ching	<i>Joint IAA/CITA Fellowship</i>
<i>Princeton University</i>	DALAL, Neal (Lensing, LSS)	
<i>Princeton University</i>	DORE, Olivier (CMBC, Lensing)	
<i>Lab. Phys. Theorique Orsay</i>	DUFAUX, Jean-Francois (Cosmology)	<i>Instituto de Fisica Teorica</i>
<i>University of Chicago</i>	DURSI, Jonathan (Astrophysical Fluid Mechanics)	
<i>Caltech</i>	EL-ZANT, Amr (Gravitaional Dynamics)	<i>Journalism in Egypt</i>
<i>Australia</i>	FISCHERA, Joerg	
<i>John Hopkins University</i>	FRANCE, Kevin	<i>University of Colorado</i>
<i>Monash University</i>	HUMBLE, Robin (SPH)	<i>Canberra</i>
<i>Arcetri Observatory</i>	ILIEV, Ilian (Cosmology)	<i>University of Zurich</i>
<i>Northwestern University</i>	IVANOVA, Natasha (High Energy)	
	JAPSEN, Katharina	
<i>Caltech</i>	KESDEN, Mike (Cosmology)	
<i>UC Berkeley</i>	LITHWICK, Yoram (Planetary)	
<i>University of Toronto</i>	MacTAVISH, Carrie (CMB, Planck)	
<i>University of Illinois</i>	MAJUMDAR, Subha (Cosmology)	<i>Tata Institute for Fundamental Rese...</i>
<i>Princeton University</i>	McDONALD, Pat (Cosmology)	
	MENARD, Brice	
<i>Princeton University</i>	NOLTA, Michael (CMB cosmologist)	
<i>Max Planck Institute</i>	PFROMMER, Christoph (Clusters, Cosmic rays)	
<i>Stanford University</i>	PROKUSHKIN, Sergey (Early universe, Strings)	
<i>MIT</i>	SHIROKOV, Alexander (N-body)	
<i>Caltech</i>	SIEVERS, Jonathan (CMB)	
<i>NASA AMES</i>	THOMMES, Edward (Dynamics)	<i>Northwestern University</i>
<i>University of Wisconsin-Madison</i>	YAN, Huirong (ISM)	
<i>Princeton University</i>	YOUDIN, Andrew	

**Long Term Visitors (12), Short Term (122)
+ Graduate Students (14)**

CITA Current Snapshot...

CITA Alumni in Permanent or Tenure-Stream Positions

- P. Armitage, Assistant Professor, Dept. of Astrophysical & Planetary Science, University of Colorado
- P. Arras, Assistant Professor, Dept. of Astronomy, University of Virginia
- K. Ashman, Assistant Professor, Dept. of Physics, Baher University
- A. Babul, Professor, Dept. of Physics and Astronomy, University of Victoria
- R. Barkana, Senior Lecturer, Tel Aviv University
- J. Barnes, Professor, Institute for Astronomy, University of Hawaii, USA
- P. Barnes, Staff Scientist, NRAO, Socorro, New Mexico, USA
- S. Basu, Assistant Professor, Dept. of Physics & Astronomy, University of Western Ontario
- A. Beloborodov, Associate Professor, Dept. of Astronomy, Columbia University
- F. Bernardeau, ingénieur CEA, Service de Physique Théorique, Saclay, France
- L. Binette, Associate Professor, UNAM, Instituto de Astronomia, Mexico City, Mexico
- O. Blaes, Associate Professor, Dept. of Physics, University of California, Santa Barbara
- P. Brown, Lecturer, Dept. of Biological Sciences, University of Manchester, UK
- B. Chaboyer, Associate Professor, Dept. of Physics & Astronomy, Dartmouth College
- J. Cho, Assistant Professor, Chungnam National University
- S. U. Choe, Professor, Seoul National University, Korea
- M. Choptuik, Professor, Dept. of Physics, University of British Columbia
- S. Colombi, chargé de recherche, l'Institut d'Astrophysique, Paris, France
- C. Contaldi, Lecturer, Imperial College
- H. Couchman, Professor, Dept. of Physics & Astronomy, McMaster University
- R. Crittenden, Reader, Institute of Cosmology and Gravitation, University of Portsmouth
- L. Dones, Senior Research Scientist, Southwest Research Institute
- J. Feige, Assistant Professor, University of Manitoba
- G. Felder, Assistant Professor, Dept. of Physics, Smith College
- H. Feldman, Associate Professor, Dept. of Physics & Astronomy, University of Kansas
- A. Frolov, Assistant Professor, Dept. of Physics, Simon Fraser University
- B. Gladman, Associate Professor, Dept. of Physics & Astronomy, UBC
- B. Hansen, Assistant Professor, UCLA
- H. Hoekstra, Assistant Professor, University of Victoria
- G. Holder, Assistant Professor, McGill University
- M. Holman, Astrophysicist, Planetary Sciences Division, Smithsonian Astrophysical Observatory
- A. Jaffe, Lecturer, Imperial College
- D. Johnstone, Assoc. Research Officer, Herzberg Institute of Astrophysics
- A. Klypin, Associate Professor, Dept. of Astronomy, New Mexico State University
- L. Kofman, Professor, University of Hawaii to CITA
- L. Knox, Associate Professor, Dept. of Physics, UC Davis
- K. Kuijken, Professor, Leiden University
- J. Lattanzio, Reader and Deputy Head, Dept. of Mathematics, Monash University, Australia
- B. Latter, Staff Scientist, IPAC, California Institute of Technology, USA
- A. Lazarian, Associate Professor, Dept. of Astronomy, University of Wisconsin at Madison
- H.-M. Lee, Professor, Pusan National University, Korea
- J. Levin, Assistant Professor, Barnard University
- Y. Levin, Assistant Professor, University of Leiden
- M. Liebendorfer, Assistant Professor, University of Basel
- P. Lilje, Professor, Institute of Theoretical Astrophysics, University of Oslo, Norway
- M. Lyutikov, Assistant Professor, Purdue University

- S. Majumdar, Assistant Professor, Tata Institute of Fundamental Research, Bombay, India
- R. Malaney, Senior Lecturer, School of Electrical Engineering and Telecommunications, University of New South Wales
- C. Matzner, Assistant Professor, Dept. of Astronomy, University of Toronto
- M. Medvedev, Assistant Professor, University of Kansas
- A. Meiksin, Reader, Dept. of Physics, University of Edinburgh, UK
- M. Merrifield, Professor, Dept. of Astronomy, University of Nottingham, UKD. Merritt, Professor, Dept. of Physics, Rochester Institute of Technology
- M. Miville-Deschenes, charge de recherche Iere classe au CNRS, Institut d'Astrophysique Spatiale
- I. Murakami, Staff Scientist, National Institute for Fusion Science, Nagoya, Japan
- J. Murray, Assistant Professor, University of Leicester
- S. Myers, Staff Scientist, NRAO
- P. Natarajan, Assistant Professor, Dept. of Astronomy, Yale University
- L. Nelson, Professor, Dept. of Physics, Bishop's University
- A. Noriega-Crespo, Staff Scientist, SIRTf Science Center, Caltech
- M. Peloso, Assistant Professor, University of Minnesota
- C. Pichon, Chargé de recherche, l'Observatoire de Strasbourg
- D. Pogosyan, Associate Professor, Dept. of Physics, University of Alberta
- S. Prunet, Staff Scientist, Institut d'Astrophysique de Paris
- T. R. Quinn, Research Assistant Professor, University of Washington, USA
- A. Raga, Professor, UNAM, Instituto de Astronomia, Mexico City, Mexico
- D. Richardson, Assistant Professor, Dept. of Astronomy, University of Maryland
- B. Ryden, Associate Professor, Dept. of Astronomy, Ohio State University
- P. Saha, Scientist, ETH, Zurich
- V. Sahni, faculty, Inter-University Centre for Astronomy and Astrophysics, Pune, India
- R. Scoccimarro, Assistant Professor, New York University
- N. Shaviv, Assistant Professor, Hebrew University
- T. Souradeep, faculty, Inter-University Centre for Astronomy and Astrophysics, Pune, India
- S. Sridhar, faculty, Inter-University Centre for Astronomy and Astrophysics, Pune, India
- G. Starkman, Associate Professor, Dept. of Physics, Case Western Reserve University
- A. Stebbins, Staff Scientist, NASA/Fermilab Astrophysics Center, USA
- J. F. Sygnet, chargé de recherche, Institut d'Astrophysique, Paris, France
- I. Szapudi, Assistant Professor, University of Hawaii
- S. Terebey, Professor, California State University in Los Angeles
- P. Thomas, Professor, Astronomy Centre, University of Sussex, UK
- C. Thompson, Associate Professor, Dept. of Physics & Astronomy, University of North Carolina to CITA
- J. Touma, faculty, American University of Beirut
- D. van Buren, Project Manager, Jet Propulsion Laboratory, Caltech
- R. van de Weygaert, Lecturer, Kapteyn Astronomical Institut, University of Groningen, The Netherlands
- L. van Waerbeke, Assistant Professor, University of British Columbia
- J. Wang, Assistant Professor, University of Maryland (d)
- R. Webster, Professor, School of Physics, University of Melbourne, Australia
- M. West, Professor, Dept. of Physics & Astronomy, University of Hawaii at Hilo
- L. Widrow, Associate Professor, Dept. of Physics, Queen's University
- G. Wilson, Scientist, SIRTf, Caltech
- Y. Wu, Assistant Professor, Dept. of Astronomy, University of Toronto
- J. Weingartner, Assistant Professor, Dept. of Physics & Astronomy, George Mason University
- G. Yepes, Professor Titular, Departamento de Fisica Teorica C-XI, Universidad Autonoma Madrid, Spain

CITA Current Snapshot...

CITA ALUMNI in FACULTY POSITIONS WITHIN CANADA

- **A. Babul**, Professor, Dept. of Physics and Astronomy, University of Victoria
- **S. Basu**, Assistant Professor, Dept. of Physics & Astronomy, University of Western Ontario
- **M. Choptuik**, Professor, Dept. of Physics, University of British Columbia
- **H. Couchman**, Professor, Dept. of Physics & Astronomy, McMaster University
- **J. Fiege**, Assistant Professor, University of Manitoba
- **A. Frolov**, Assistant Professor, Simon Fraser University
- **B. Gladman**, Associate Professor, Dept. of Physics & Astronomy, UBC
- **H. Hoekstra**, Assistant Professor, Dept. of Physics & Astronomy, University of Victoria
- **G. Holder**, Assistant Professor, Dept. of Physics, McGill University
- **D. Johnstone**, Associate Research Officer, NRC, HIA
- **L. Kofman**, Professor, CITA
- **C. Matzner**, Assistant Professor, Dept. of Astronomy, University of Toronto
- **L. Nelson**, Professor, Dept. of Physics, Bishop's University
- **D. Pogosyan**, Associate Professor, Dept. of Physics, University of Alberta
- **C. Thompson**, Professor, CITA
- **L. van Waerbeke**, Assistant Professor, Dept. of Physics & Astronomy, UBC
- **L. Widrow**, Associate Professor, Dept. of Physics, Queen's University
- **Y. Wu**, Assistant Professor, Dept. of Astronomy, University of Toronto

A number of **CITA National Fellows** have also gone on to faculty positions in Canada:

- **M. Hudson**, Professor, University of Waterloo;
- **R. Ouyed**, Associate Professor, University of Calgary;
- **J. Wadsley**, Assistant Professor, McMaster University

Some CITA Graduate students as well; e.g. **M. Mandy**, Associate Professor, University of Northern British Columbia; **J. Wadsley**

CITA Current Snapshot...

CITA COUNCIL MEMBERS 2006-2007

Norman Murray Director

Meric Gertler Vice-Dean, FAS, UofT

Dick Henriksen Chair, Queen's University (2008)

Sharon Morsink Secretary, University of Alberta (2009)

***Julio Navarro** University of Victoria, CAS rep (2008)

Shantanu Basu University of Western Ontario (2010)

****Douglas Scott** University of British Columbia (2007)

***CAS rep - 2 year term 2006-2008**

****Term Expires – one new member for 2007-2008**

3. MRS Grant

SUMMARY from NSERC Site Review Report.

Key Quotes:

- The Committee is unanimously of the opinion that CITA is one of a select group of elite institutions worldwide pursuing research of the highest quality in the important and topical areas of modern theoretical astrophysics.
- [CITA] is influential in attracting excellent researchers to Canada, and Canadian astrophysics has benefited directly from CITA.
- The benefit of CITA to the community is well established. Canadian astronomy, and not only theoretical astrophysics, would be less effective had the drawing power and focus of CITA not existed.
- The production of highly qualified people is a core mission of CITA, and in this it has been spectacularly successful. CITA can compete on the world stage for the best young people, its excellent faculty members provide them with training, opportunities and visibility which enhances their value to the research community of Canada.
- CITA appears to be the best managed program of its type.

MRS GRANT...

RECOMMENDATIONS:

- The Committee unanimously recommends that the proposed **increase in the number of National Fellows** should be funded. The current proposal requests a doubling of the National Fellows from 2 per annum to 4 per annum to make 8 in total. An increase in the number of National Fellows will immediately benefit Canadian Universities, and in particular will allow a wider annual geographical distribution of posts than is currently possible.
- The Committee suggests that CITA, with the CITA Council and the University of Toronto, and in consultation with the whole Canadian astronomy community, gives **serious thought to how the CITA paradigm should evolve beyond the next 5 years to best benefit Canadian astronomy**. Further, the Committee suggests that this vision encompass a significant part of the next renewal application.
- The Committee encourages **CITA to continue and even strengthen its work with graduates and undergraduates**.
- The Committee unanimously **recommends that the proposed salary and benefits increases should be awarded in full**.
- The Committee unanimously agreed on the following priority order should it not be possible to fund the application in full:
 1. **the increase in salaries and benefits for the current cohort of Fellows and RA**. The proposed increase in stipends, benefits and operating costs is necessary to ensure that CITA remain competitive.
 2. **the increase in the non-salary costs, with special attention to those with maximum benefit to the community**.
 3. **the increase in the number of National Fellows from the present 4 to at least 6 and preferably the 8 requested**. The proposed increase in the number of NF is strongly endorsed and will demonstrably bring great benefit to Canada.
 4. **the proposed new Senior RA**. The additional SRA position is endorsed assuming that funds permit

The *minimum* funding recommended by the Committee covers priorities 1-3. The committee endorses the case made for the additional SRA and recommends funding if at all possible within overall budgetary constraints.

4. Computing

HPC SYSTEMS

- **536-CPU Beowulf cluster (McKenzie) with:**
 - 2.4GHz Xeon processors, 268GB RAM, 44TB disk
 - novel, inexpensive, high-bandwidth gigabit network (designed and implemented at CITA)
 - 1.55Tflops (60% of peak) on HPL benchmark
 - ranked #38 in world on June 2003 Top 500 list
 - UBERFS distributed file system now in production
 - 9TB (expandable) single file system combines 80GB drives on nodes
 - redundancy built-in
 - written by co-op student P. Wagner
- **Itanium (lobster) cluster:**
 - 8 nodes; each with 4x733MHz IA-64 CPUs
 - total of 512GB RAM
 - direct, point-to-point gigabit links between all members
- **GS320 (“wildfire”):**
 - 32 CPU shared-memory system
 - 731 MHz alphas (EV6.7), 64GB RAM

McKenzie cluster usage statistics

- used (75-80)% of available cycles since Jan 2003 (similar to usage at NSF supercomputer sites)
- 25% of cycles went to external (astro) users
- uptime >99.9%
 - **Major External Users**
 - U Vic
 - Queen’s
 - McMaster
 - St Mary’s
 - Zurich
 - **Major Collaborators**
 - U Alberta
 - NRAO
 - Caltech
 - Case Western
 - » IAP
 - **Major Research Areas**
 - planetary dynamics
 - globular cluster formation
 - galaxy mergers
 - accretion onto black holes
 - large-scale structure and cosmology
 - CMB data analysis; cosmic parameter estimation

CITA_{hpc}: Nationally Available Resources

- 20% of cycles on McKenzie cluster and GS320 (astro+numerical relativity), check website
- <http://www.cita.utoronto.ca/webpages/cita-hpc.shtml>
- assistance from Parallel Programmer Hugh Merz
- collaborative projects e.g. on Itanium cluster (Ue-Li Pen):
- CITA has developed fully-optimized MPI codes capable of:
 - 2,0003 particles on 4,0003 mesh
 - 2,0003 grid for ideal hydro and MHD
- CITA codes have been ported to:
 - bluegene (scaled well to 4,096 CPUs)
 - wrangler at Univ. of Texas (1,300 CPUs with infiniband)

5. National Programs

A. CITA NATIONAL FELLOWS

National Fellows are nominated by the host university and selected by CITA Council using the same quality criteria as for the CITA research fellows, along with strategic national considerations. Since the start of the program in 1988, we have named XX National Fellows.

CITA provides 50% of the stipend up to 52K/2 years, plus up to 4K research expenses. The remainder is provided by the host university. National Fellows are encouraged to visit CITA for extended periods of time.

CITA put ads in the AAS Job Register, highlighting the National Fellow Program and web links.

CITA also advertised National Fellow positions from CITA's Web site, coupling NF visibility to CITA RA opportunities.

CITA helps in recruitment.

National Fellows for 2007-2008:

- **DOBBS-DIXON, Ian** McGill University (2007-2009) Nominated by Andrew Cumming. Research interests: numerical simulations, planets
- **STINSON, Greg** McMaster University (2007-2009) > Nominated by Hugh Couchman. Research interests: star formation
- **CAI, Kai** McMaster University (2006-2008) Nominated by R. Pudritz. Research interests: Protostellar Jets
- **CUK, Matija** University of British Columbia (2006-2008) Nominated by B. Gladman. Research interests: Planetary Dynamics and Planet formation

National Fellows for 2006-2007:

- **CAI, Kai** McMaster University (2006-2008) Nominated by R. Pudritz. Research interests: Protostellar Jets
- **CUK, Matija** University of British Columbia (2006-2008) Nominated by B. Gladman. Research interests: Planetary Dynamics and Planet formation
- **BRASSER, Ramon** Queen's University (2005-2007) Nominated by Martin Duncan. Research interests: Solar system dynamics
- **HEYMANS, Catherine** University of British Columbia (2005-2007) Nominated by Ludo van Waerbeke. Research interests: Gravitational Lensing

National Programs...

B. SENIOR VISITING FELLOWS

CITA supports salaries of faculty members from other Canadian universities to make extended visits to CITA Recent awards:

2007-08	Ralph Pudritz (McMaster Unveristy)
2005-06	Rachid Ouyed (University of Calgary) Norbert Bartel (York University)
2004-05	Lorne Nelson (Bishop's University)
2003-04	Hugh Couchman (McMaster University)
2002-03	Mike Hudson (University of Waterloo) Arif Babul (University of Victoria)
2000-01	Norbert Bartel (York University)
1999-00	Werner Israel (University of Victoria) Sun Kwok (University of Calgary) Marshall McCall (York University) Douglas Scott (UBC) Larry Widrow (Queen's University)
1998-99	Kim Innanen (York University) Lorne Nelson (Bishop's University)
1995-97	Hugh Couchman (Western Ontario) Dick Henriksen (Queen's University) Michael West (Saint Mary's University) Larry Widrow (Queen's University) Ralph Pudritz (McMaster University) Paul Wesson (Waterloo)

We are interested in new Senior Visiting Fellows:

Typically the fellowships provide funding to release the fellow from teaching and administrative duties for one academic term, or for sabbatical top-up. The Fellow is expected to spend a minimum of 50% of the supported time in residence at CITA. The CITA Senior Visiting Fellows Program began with start-up funds from the UofT Astronomy Department and has thrice received injections of funding from the UofT School of Graduate Studies.

National Programs...

FUTURE SABBATICAL VISITORS:

- Professor **Gary Felder**, Smith College
- Professor **Francis Bernardeau** Centre D'\etudes De Saclay, Service de Physique Theorique, France

RECENT SABBATICAL VISITORS:

- Professor **Richard Ellis** from Caltech visited for 2 months
- Dr. **Steve Myers** from NRAO visited for 3 months
- Professor **Andreas Reisenegger** from the Universidad Catholica in Santiago Chile, summer 2006
- Professor **Joao Magueijo** from Imperial visiting for a year (mostly Perimeter Institute)

PREVIOUS SABBATICAL VISITORS:

- Professor **Sergei Shandarin** from University of Kansas visited for 6 months
- Professor **Rien van de Weygaert** from University of Groningen visited for one month
- Professor **Peter Coles** from University of Nottingham visited for 3 months
- Professor **Norbert Bartel** from York University visited for 4 months
- Professor **Rachid Ouyed** from Univ. of Calgary visited for 4 months
- Professor **Dong Lai** from Cornell visited for a term
- Professor **Lorne Nelson** from Bishop's University visited for a term
- Professor **Ewan Stewart** from KAIST Korea visited for 6 months
- Professor **Arif Babul** from University of Victoria visited for 4 months.
- Professor **Mike Hudson** from University of Waterloo was visiting for 4 months.
- Professor **Margot Mandy** from the University of Northern British Columbia was a CITA visitor for 2 months.
- Professor **Omer Blaes** from UC Santa Barbara visited for 3 months.
- Professor **Tongjie Zhang** from Beijing Normal University was visited for a year.

National Programs...

CITA LONG TERM VISITORS: 12 in 2006-2007

<i>Caltech</i>	Richard Ellis	<i>CITA Sabbatical Visitor</i>
<i>NRAO</i>	Steve Myers	<i>CITA Sabbatical Visitor</i>
<i>Imperial College</i>	Joao Magueio	<i>CITA Sabbatical Visitor</i>
<i>Universidad Catholica</i>	Andreas Reisenegger	<i>CITA Sabbatical Visitor</i>
<i>IPA, Paris</i>	Jean Michel Désert	<i>CITA Visitor</i>
<i>Ecole Normale Supérieure de Lyon</i>	Gilles Chabrier	<i>CITA Visitor</i>
<i>Ecole Normale Supérieure de Lyon</i>	Isabelle Baraffe	<i>CITA Visitor</i>
<i>MPA, Garching</i>	Dimitrios Giannios	<i>CITA Visitor</i>
<i>Columbia</i>	Andrei Beloborodov	<i>CITA Visitor</i>
<i>Waterloo</i>	Mich Fich	<i>CITA Visitor</i>
<i>Waterloo</i>	James Taylor	<i>CITA Visitor</i>
<i>Caltech</i>	Arnold Boothroyd	<i>CITA Visitor</i>

CITA SHORT TERM VISITOR PROGRAM: 122 in 2006-2007

CITA has a vigorous visitors program that brings a number of Astronomy and Physics faculty members from other Canadian Universities and from abroad for both extended stays and shorter visits.

National Programs...

C. PREDOCTORAL PROGRAM:

Bringing students in their PhD programs to CITA for periods of a few months to a year has proven to be a great success. All candidates have come with their own funding. Participants in the program so far are:

- [Marie Martig](#) - Ecole Centrale de Paris, 2006
- [Jean Coupon](#) – Observatoire de Paris, 2006
- [Jan Kratochvil](#) – Stanford, 2005-2006
- [Amir Hajian](#) – IUCAA, India, 2005
- [Doug Hanley](#) – Caltech, 2004
- [Wan-II Park](#) – KAIST, Korea, 2004
- [Parker Troischt](#) – University of North Carolina, 2004
- [Francois Fressin](#) – Institut d'Astrophysique Spatiale, Paris, 2003
- [Stelios Kazantzidis](#) – Institute for Theoretical Physics, Zurich, 2003
- [Jie Wang](#) – Beijing Observatory. 2003
- [Shingkwong Wong](#) – National Taiwan University, 2003
- [Sebastien Ray](#) – École Normale Supérieure, 2002
- [Yacine Dolivet](#) – École Normale Supérieure, 2001
- [Kenji Kadota](#) – University of California, Berkeley, 2001
- [Tom Montroy](#) – University of California, Santa Barbara, 2001-2001
- [Aristotle Socrates](#) – University of California, Santa Barbara, 2001
- [Amanda Karakas](#) – Monash University, 2000
- [Juhan Kim](#) – Seoul National University, 2000-2001
- [Johannes Martin](#) – University of Jena, Germany, 2000
- [Sebastian Pichler](#) – Ludwig, Maximilians Universitaet, Germany, 2000-2001
- [Gary Felder](#) – Stanford, 1999-2000 (now a CITA PDF)
- [Céline Anthoine](#) – École Normale Supérieure, 1999
- [Colin Borys](#) – University of British Columbia, 1999

National Programs...

D. GRADUATE STUDENTS 2006-2007: 14

- **SLOAN, Peter** (Physics). Supervised by L. Kofman
- CROLL, Bryce (Astronomy). Supervised by N. Murray
- **BRADEN, Jonathan** (Physics). Supervised by L. Kofman
- **HARPER-CLARK, Elizabeth** (Astronomy). Supervised by N. Murray
- **HARONIS, Joachim** (Physics). Supervised by U.-L. Pen
- **BATTAGLIA, Nicholas** (Astronomy). Supervised by R. Bond
- **FERNANDEZ, Rodrigo** (Astronomy). Supervised by C. Thompson
- **GONCLAVES, Daniela** (Astronomy). Supervised by P.G. Martin
- **HUANG, Zhiqi** (Astronomy). Supervised by R. Bond and L. Kofman
- **LU, Ting Ting** (Astronomy). Supervised by U.-L. Pen
- **MUDRYK, Lawrence** (Astronomy). Supervised by N. Murray
- **PANG, Bijia** (Astronomy). Supervised by U.-L. Pen
- **PRODAN, Snezana** (Physics). Supervised by N. Murray
- **VAUDREVANGE, Pascal** (Physics). Supervised by R. Bond and L. Kofman

E. SUMMER UNDERGRADUATES 2006-2007:

This summer there are 7 summer students working with faculty in collaboration with many of the postdoctoral fellows. 5 have won NSERC Summer undergraduate awards.

NSERC:

- **FITZGERALD, Joseph** (Memorial) working on "Gravitational Waves from the Early Universe" with L. Boyle and R. Rafikov
- **HELFIELD, Brandon** (McGill) working on "Stable Magnetic Field Configurations in Stars" with J. Braithwaite and C. Thompson
- **LADHANI, Laila** (Western) working on "Accelerating Charged Dust in Astrophysical Plasma" with H. Yan and N. Murray
- **MCLEAN, Margaret** (Queen's) working on "Constraining Dark Matter Forces within the Mergers of Equal Mass Galaxies" with M. Kesden and R. Rafikov
- **KIM, Lawrence** (Calgary) working on "CFHT Legacy Survey" with B. Menard and N. Murray

NON-NSERC:

- **RAHMEN, Mubdi** (UofT) working "BIRS stars and young cluster near KR 140" with P.G. Martin
- **Ting Zhu** (UofT) working on "Modelling the Sunyaev-Zeldovic Effect with Interferometers" with J. Sievers

National Programs...

F. COMPUTATIONAL UNDERGRADUATE STUDENTS:

Summer 2007

Radu Nitu, Assistant to the Systems Manager, co-op student

Winter 2007

Jacob de Bruyn, Assistant to the Systems Manager, co-op student

Fall 2006

Alex Zenkov, Assistant to the Systems Manager, co-op student

Summer 2006

Paul Millerd, Assistant to the Systems Manager, co-op student

Winter 2006

Alex Zenkov, Assistant to the Systems Manager, co-op student

Fall 2005

Jason Chong, Assistant to the Systems Manager, co-op student

Summer

2005 **Peter Wagner**, Assistant to the Systems Manager, co-op student

Winter 2005

Jason Chong, Assistant to the Systems Manager, co-op student

Fall 2004

Peter Wagner, Assistant to the Systems Manager, co-op student

Summer 2004

Philip Petracca, Assistant to the Systems Manager, co-op student

Mubdi Rahman, Summer student web assistant, windows

Spring 2004

Steven Di Rocco, Assistant to the Systems Manager, co-op student

Winter 2003

Steven D'Cruz, Assistant to the Systems Manager, co-op student

Summer 2003

Steven Di Rocco, Assistant to the Systems Manager, co-op student

Winter/Spring 2003

David Wu, Assistant to the Systems Manager, co-op student

Summer 2002

Don Banh, Assistant to the Systems Manager

Winter/Spring 2002

Filip Lazar, Assistant to the Systems Manager, co-op student

Summer 2001

Nishant Faria, Assistant to the Systems Manager

Don Banh, Assistant to the Systems Manager, continued 2001-02 academic year on a reduced basis

6. CITA ACTIVITY

A. CITA EXCHANGE PROGRAM:

CITA and the Kavli Institute for Theoretical Physics at Santa Barbara:

To KITP

- **Jonathan Dursi**, CITA, May 2007
- **Ilian Iliev**, CITA, January-February 2005
- **Edward Thommes**, CITA, February-March 2004
- **David Ballantyne**, CITA, June 2003
- **Joseph Weingartner**, CITA, May 2002
- **Andrei Beloborodov**, CITA, March 2002
- **Mikhail Medvedev**, CITA, April 2002
- **Phil Arras**, CITA, April-May 2001
- **Yanqin Wu**, CITA, April-May 2001

From KITP

- **Evan Scannapieco**, KITP May-June 2004
- **Phil Arras**, KITP, February 2003
- **Dmitri Uzdensky**, KITP, May 2002
- **Xuele Chen**, KITP, May 2002
- **Andrew Cumming**, KITP, July 2001

CITA and Max Planck Institute for Astrophysics:

To MPA

- **Jonathan Dursi**, CITA, November 2006
- **Natasha Ivanova**, CITA, Winter 2006

From MPA

- **Dimitrios Giannois**, MPA, April – May 2007
- **Jonathan Braithwaite**, MPA, January – February 2006
- **Torsten Ensslin**, MPA Spring 2006

NEW EXCHANGE PROGRAM:

CITA and the Academia Sinica Institute of Astronomy and Astrophysics

CITA ACTIVITY...

B. SACKLER VISITING ASTROPHYSICIST

Each year CITA invites an internationally distinguished scholar conducting research in theoretical astrophysics to give two lectures (one public) at the University of Toronto, and to interact with the CITA faculty, research fellows and graduate students, as well as researchers and students in the Departments of Astronomy and Physics. This is funded by an endowment, the Raymond and Beverly Sackler Visiting Astrophysicist Program. The visit is intended to be the highlight of the academic year at CITA.

- **Sir Martin Rees (Lord Martin)**, Cambridge, 1997-98
- **Peter Goldreich**, Caltech, 1998-99
- **Frank Shu**, Berkeley, 1999-00
- **Jim Peebles**, Princeton, 2000-01
- **John Bahcall**, Princeton, 2001-02
- **Andrei Linde**, Stanford, 2002-03
- **George Efstathiou**, Cambridge, 2003-04
- **Chris McKee**, UC Berkeley, 2004-05
- **Rashid Sunyaev**, Max-Planck, 2005-2006
- **Scott Tremaine**, IAS Princeton, 2006-2007

CITA ACTIVITY...

C. MEETINGS SUPPORTED IN 2006-2007:

- **40 Years of Pulsars**, August 2007, McGill (A. Cumming)
- **Theory Canada 3**, June 2007, University of Alberta (M. Paranjape)
- **Probing the Origins of the Cosmos**, May 2007, McMaster (Pudritz)
- **Multiplicity in Star Formation**, May 16-18, 2007, University of Toronto (R. Jayawardhana)
- **Black Holes VI Workshop**, May 12-16, 2007, University of New Brunswick (J. Gegenberg)
- **12th Canadian Conference on General Relativistic Astrophysics**, May 17-20, University of New Brunswick (J. Gegenberg)
- **Unruh-Wald Festschrift**, University of British Columbia (M. Choptiuk)
- **From Protostellar Disks to Planetary Systems**, May 18-19, 2006, University of Western Ontario (Organizer: S. Basu)
- **Second FLAMR Workshop**, May 22 - June 2, 2006, CITA/UBC (Organizer: Frans Pretorius)
- **Theory Canada 2**, June 7-10, 2006, Perimeter Institute (Organizer: M. Paranjape)
- **AAS Division on Dynamical Astronomy**, June 25-29, 2006, Saint Mary's University (Organizer: J. Hahn)
- **16th Kingston Theoretical Astrophysics Meeting**, July 18-20, 2006, Queen's University (Organizer: R. Thacker)

CITA ACTIVITY...

D. AWARDS:

THE BEATRICE D. TREMAINE FELLOWSHIP

This is an endowed award to be given annually on the basis of outstanding research to a current CITA research fellow.

- 2006: [Michael Nolte](#)
- 2005: [Jonathan Sievers](#)
- 2004: [Carlo Contaldi](#)
- 2003: [Yuri Levin](#)
- 2002: [Andrei Beloborodov](#)
- 2001: [Henk Hoekstra](#)
- 2000: [Nir Shaviv](#)
- 1999: [Dmitri Pogosyan](#)

THE JEFFREY L. BISHOP FELLOWSHIP

Jeffrey Bishop was one of the first group of postdocs at CITA. He died tragically in an accident shortly after leaving CITA. In his memory his mother gives a donation biennially.

- 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](#)

6. New Membership Applications and Renewals

NEW MEMBERSHIP APPLICATIONS:

- Andrew Cumming (McGill)
- Andrei Frolov (Simon Fraser)
- Levon Pogosian (Simon Fraser)

RENEWAL APPLICATIONS:

- Robert Thacker (Queen's)
- Yanquin Wu (UofT)
- Francois Wesemael (UdeM)
- David Guenther (SMU)
- Chris Matzner (UofT)

Membership of CITA Inc

Murray Alexander (NRC) 2010
Arif Babul (Victoria) 2010
Shantanu Basu (Western) 2010
Pierre Bastien (Montéal) 2009
Richard Bond (CITA) 2011
Ray Carlberg (Toronto) 2011
Brian Chaboyer (Dartmouth) 2009
David Clarke (St. Mary's) 2009
Alan Coley (Dalhousie) 2010
Hugh Couchman (McMaster) 2010
Robert Deupree (St. Mary's) 2009
Martin Duncan (Queen's) 2010
John Dubinski (Toronto) 2011
Charles Dyer (Toronto) 2011
Mike Fich (Waterloo) 2008
Gilles Fontaine (Montéal) 2007
Brett Gladman (UBC) 2007
David Guenther (St. Mary's) 2007
Joseph Hahn (St. Mary's) 2009
Mark Halpern (UBC) 2011
David Hartwick (Victoria) 2010
Richard Henriksen (Queen's) 2010
Jeremy Heyl (UBC) 2009
Henk Hoekstra (Victoria) 2010
Michael Hudson (Waterloo) 2011
Kim Innanen (York) 2011
Werner Israel (Victoria) 2010
Doug Johnstone (HIA NRC at Victoria) 2010
Lev Kofman (CITA) 2008
Sun Kwok (Calgary) 2010
Kayall Lake (Queen's) 2011
Denis Leahy (Calgary) 2011
Margo Mandy (UNBC) 2010

Michael Marlborough (Western) 2010
Hugo Martel (Laval) 2010
Peter Martin (CITA) 2010
Christopher Matzner (Toronto) 2007
Romas Mitalas (Western) 2011
George Mitchell (St. Mary's) 2010
Sharon Morsink, (Alberta) 2011
Norman Murray (CITA) 2009
Julio Navarro (Victoria) 2009
Lorne Nelson (Bishop's) 2011
Rachid Ouyed (Calgary) 2010
Ue-Li Pen (CITA) 2008
Serge Pineault (Laval) 2011
Eric Poisson (Guelph) 2011
Ralph Pudritz (McMaster) 2008
Douglas Scott (UBC) 2008
Ian Short (St. Mary's) 2009
Ranga Sreenivasan (Calgary) 2008
Glenn Starkman (Case Western) 2010
Peter Sutherland (McMaster) 2011
Chris Thompson (CITA) 2011
Scott Tremaine (Princeton) 2010
Don Vandenberg (Victoria) 2010
Sidney van den Bergh (DAO) 2008
Ludo van Waerbeke (UBC) 2010
Francois Wesemael (Montréal) 2007
Michael West (Hilo) 2010
Paul Wesson (Waterloo) 2009
Paul Wiegert (Western) 2010
Larry Widrow (Queen's) 2010
Yanqin Wu (Toronto) 2007

CITA on the WWW

CITA CAN BE FOUND AT:

<http://www.cita.utoronto.ca>

There you will find all the usual document information about CITA, a list of current personnel, Annula Reports, CITA guidelines, CITA Visitor and Seminar lists, etc.

Pillars of Support

CITA, Inc. & NSERC

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)

New structure for Institute Grants under discussion with NSERC modified MFA program (MRS, Major Research Support).

CITA, Arts & Science@UofT

- **Institute in the School of Graduate Studies (extremely positive 5 year reviews in 1996, May 2001)**
- **Institute in the Faculty of Arts & Science, July 2005 (extremely positive reviews Fall 2006)**

CIAR Cosmology and Gravity Program

Critical node of the CIAR Cosmology and Gravity Program (3 Fellows - including Program Director until July 1, 2007)

Other:

NSERC Operating Grants for Faculty, CFI for computing, External Fellowships for PDFs, NSERC/CFI/CSA collaborative grants and other targets of opportunity