NTCO

New Technologies for Canadian Observatories
AGM 2017
December 14-15, University of Victoria

Professors

Grants Programs Overview

Innovation

Chairs and Faculty Support Overview

Research Tools and Instruments and Infrastructure Programs

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Collaborative Research and Training Experience Program

Overview	
Duration	Up to six years
Value	Up to $150,000 in the first year and up to $300,000 for up to five subsequent years, for a maximum of $1.65M over 6 years.

80% in student stipends

Only the second one in astronomy in the 11 year history of this NSERC program

Description

The CREATE Program is designed to improve the mentoring and training environment for the Canadian researchers of tomorrow by improving training in areas such as professional skills, communication and collaboration, as well as providing experience relevant to both academic and non-academic research environments. Initiatives do not

Objectives

The Collaborative Research and Training Experience (CREATE) Program supports the training of teams of highly qualified students and postdoctoral fellows from Canada and abroad through the development of innovative training programs that:

- encourage collaborative and integrative approaches, and address significant scientific challenges associated with Canada's research priorities;
- facilitate the transition of new researchers from trainees to productive employees in the Canadian workforce.

These innovative programs **must foster** the acquisition and development of important professional skills among students and postdoctoral fellows that complement their qualifications and technical skills, and improve their job-readiness for careers in industry, government, non-governmental organizations, and/or academia.

New Technologies for Canadian Observatories

We proposed an NSERC CREATE training program to address the need for technological innovation in the next generation of astronomical instrumentation.

- **Next decade,** innovative approaches to instrumentation will be necessary in new detector, optics & photonics, focal plane, and manufacturing technologies.
- **NTCO team,** includes researchers from four universities, the NRC, two research institutes, two observatories, and Canadian industrial partners.
- **Program design,** for students who want to be involved in technological developments *(expanded this to machine learning data analysis, so far)*
- **Team work**, thus professional skills training workshops, annual team meetings, co-supervision of trainees, an integrated thesis or dissertation.
- **Long-range goals**, (1) elevate Canada's global position in emerging optics and instrumentation, (2) prepare students for best practices, (3) enrich Canadian investments in multi-national ground-based, space-based, remote-orbiting, and space-cruising observatories.

Key Elements of NTCO

11 co-investigators

Kim Venn (UVic)

Dave Andersen (NRC)

Colin Bradley (UVic)

Laurent Drissen (Laval)

Bryan Gaensler (DI)

JJ Kavelaars (NRC)

Brenda Matthews (NRC)

Suresh Sivanandam (DI)

Simon Thibault (Laval)

Luc Simard (NRC)

Christine Wilson (McMaster)

6+3+*2* industrial partners

Honeywell/COMDEV (Ottawa)

ABB Group. (Quebec)

Fibertech Optica Ltd. (Kitchener)

NuVu Cameras (Montreal)

Institut National d'Optique (Quebec)

Dynamic Structures Ltd (Port Coq)

Limbic Media (Victoria)

Schneider Electronics (Victoria)

Sony Picture Imageworks (Vancouver)

Industrial Plankton (Victoria)

Advanced Micro Devices (Markham)

Key Elements of NTCO

This program is for students interested in technology developments.

- graduate students (MSc 2 yrs, PhD 3 yrs)
- undergraduate students (2-12 months possible)
- key for acceptance to program is the industrial internship & connection to the core research objectives of the program

Research Objectives

1. Optics & Photonics
2. Focal plane technologies
3. Manufacturing precision
4. Detector technologies
5. *Machine learning data analysis applications*
6. *Software systems for instruments*

Key Elements of NTCO

NSERC CREATE requirements

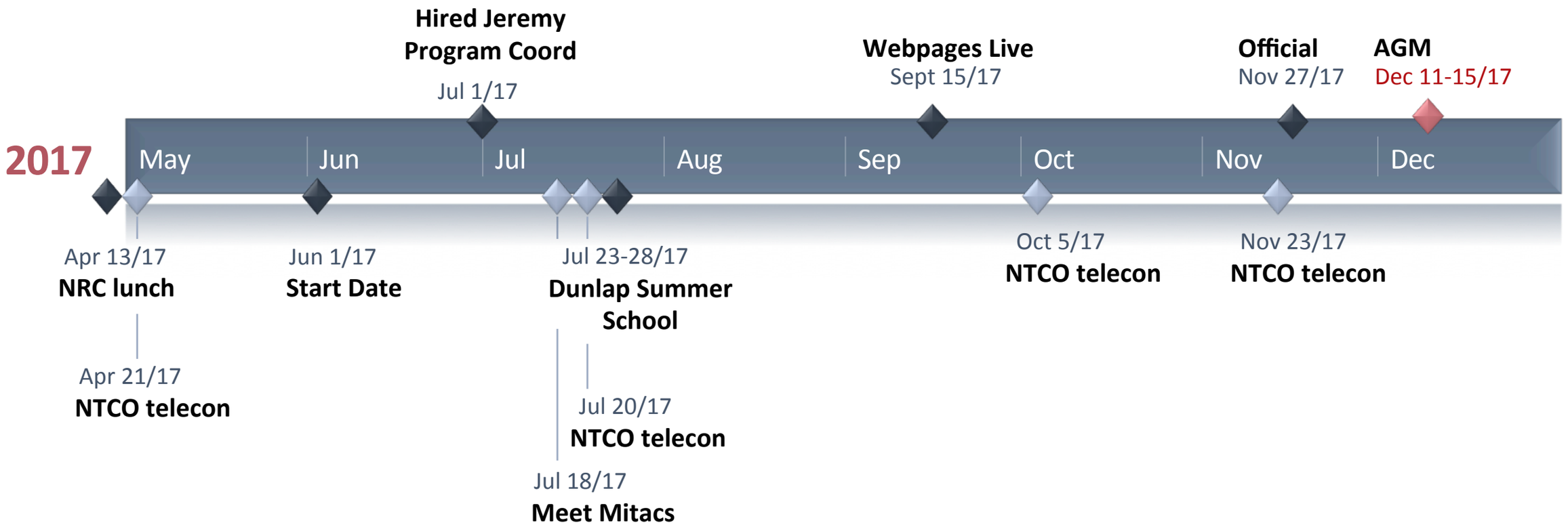
- Internship (20% time required by NSERC)
- Summer school (e.g., Dunlap Institute Summer School)
- Professional Skills workshops (e.g., Mitacs Step)
- Participation in the AGM
- Broader exposure, mentorship, and networking opportunities.
- Integrated research (thesis & industry), working in teams.

Key Elements of NTCO

Currently, about half way through Year 1

- 13 students in the program
- 5 students took the Dunlap Institute Summer School, July 2017.
- 8 students took the Project Management workshop this week.
- 10 students presenting posters, & one talk.
- exceeding our Year 1 goals in students & funding
- have been able to expand the program (appropriate subject areas, Canadian industry partners)
- outstanding program coordinator!

NTCO Timeline



How to engage with NTCO

Application Committee for supervisors & students

- online application form
- requires a NTCO co-I (for financial reporting to NSERC)
- requires a Canadian SME internship partner

Program Management Committee & Director for industrial partners

1. New internships opportunities welcome!
2. Internship & program reporting and reviews
3. Participation in NTCO (governance, AGM, etc.)
4. *Mitacs Cluster funding*

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