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Natural Sciences and Engineering  
Research Council of Canada

Conseil de recherches en sciences  
naturelles et en génie du Canada

Canada

# 2013 Research Grants Competition

## Physics Evaluation Group (1505)

Presentation by Dr. Bruce Gaulin, Group Chair

Annual Congress of the Canadian Association of Physicists  
May 27, 2013 – Montréal, QC



*French version is available*



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# Session's Outline

- General Context of 2013 Competition
- Physics Evaluation Group
- Overview of the Discovery Grants Competition Process
- Discovery Grants Competition Results
- Discovery Accelerator Supplements Competition
- Research Tools and Instruments Competition
- **Important information for the 2014 Competition**

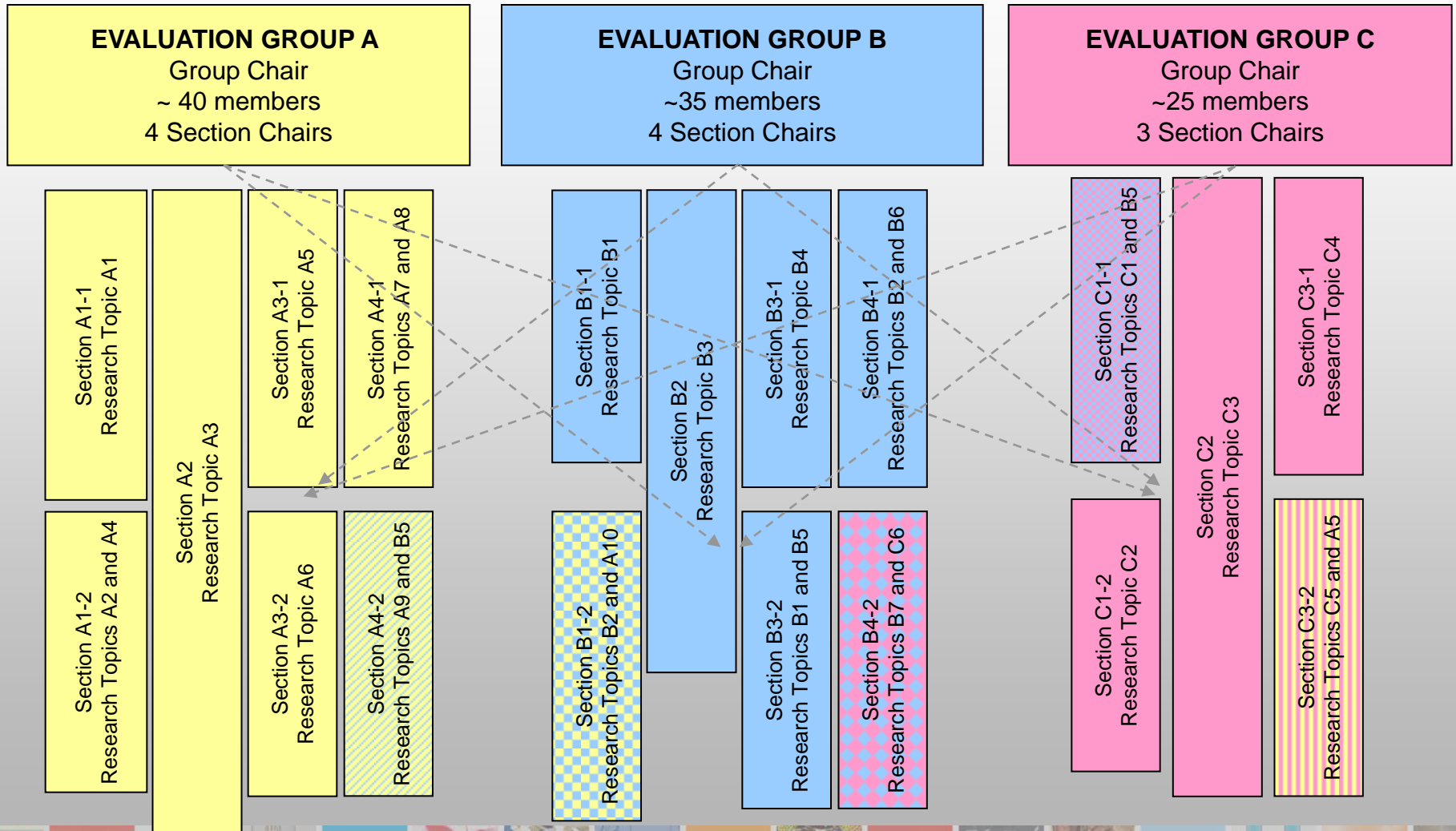
# 2013 Discovery Grants Competition

## General Context

- Fourth year of implementation of Conference model, as recommended by the Grant Selection Committee Structure Review.
  - 12 Evaluation Groups.
  - Flexible composition of Sections to ensure comprehensive review of applications.
  - Members from different Evaluation Groups joined various Sections to review applications covering topics that cross the traditional boundaries between disciplines.

# Conference Model

## Overview



# Conference Model

## How It Works

- Inside an Evaluation Group, applications are assessed within Sections.
  - Reviewers are drawn from the Evaluation Group's membership as a function of the members' expertise and the need to ensure balanced reviews.
- Members from different Evaluation Groups could participate in the review of any application, if required to ensure a comprehensive review.
  - Joint reviews.
  - Primary Evaluation Group: leads the review (“home” of application).
  - Secondary Evaluation Group(s): provides expert reviewer(s).
  - Reviewer(s) from secondary Evaluation Group(s): among the five reviewers assessing the application (full assessment, participation in deliberations, and vote).

# List of Evaluation Groups

- Genes, Cells and Molecules (1501)
- Biological Systems and Functions (1502)
- Evolution and Ecology (1503)
- Chemistry (1504)
- **Physics (1505)**
  - Subatomic Physics Evaluation Section is a standalone committee
- Geosciences (1506)
- Computer Science (1507)
- Mathematics and Statistics (1508)
- Civil, Industrial and Systems Engineering (1509)
- Electrical and Computer Engineering (1510)
- Materials and Chemical Engineering (1511)
- Mechanical Engineering (1512)

# 2013 Discovery Grants Competition

## General Context

- Two-stage review process as recommended by the International Review of the Discovery Grants Program.
  - In the first step, the Evaluation Group assesses and rates the merit of each application based on three selection criteria, consistently using the evaluation indicators.
  - The ratings lead to the grouping of applications into categories ("bins") of comparable overall merit.
  - In the second step (once all deliberations are completed), the Executive Committee balances the amounts to be awarded to the merit bins in relation to the number of applicants funded. This is done at the *global bin level* and no specific application is singled out or discussed.



# 2013 Discovery Grants Competition

## General Context

- Evaluation Groups do not make direct funding recommendations for any individual application.
  - The Executive Committee recommends the amounts associated with each funded bin.
- Process separates the merit assessment from the funding recommendation.
- Merit assessment of applications decoupled from the previous grant held by applicants.
- Applicants, new and established, with superior contributions are recognized and awarded funding at appropriate level, within the context of a competition with a constrained budget.

# Physics Evaluation Group (1505)

## 2013 Membership

- Bruce Gaulin (Group Chair)  
*McMaster University*
- Jacques Albert (Section Chair)  
*Carleton University*
- Edmund Bertschinger (Section Chair)  
*Massachusetts Institute of Technology*
- Jeffrey Hughes (Section Chair)  
*Boston University*
- Alamgir Karim (Section Chair)  
*University of Akron*
- Carlos Silva (Section Chair)  
*Université de Montréal*
- John Bechhoefer  
*Simon Fraser University*
- János Bergou  
*Hunter College of the City University of New York*
- Jean-Philippe Bernard  
*Centre d'études spatiales du rayonnement*
- Martin Bojowald  
*Pennsylvania State*
- Joseph Borovsky  
*Space Science Institute*
- James Cordes  
*Cornell University*
- Mirjam Cvetič  
*University of Pennsylvania*
- Kari Dalnoki-Veress  
*McMaster University*

# Physics Evaluation Group (1505)

## 2013 Membership

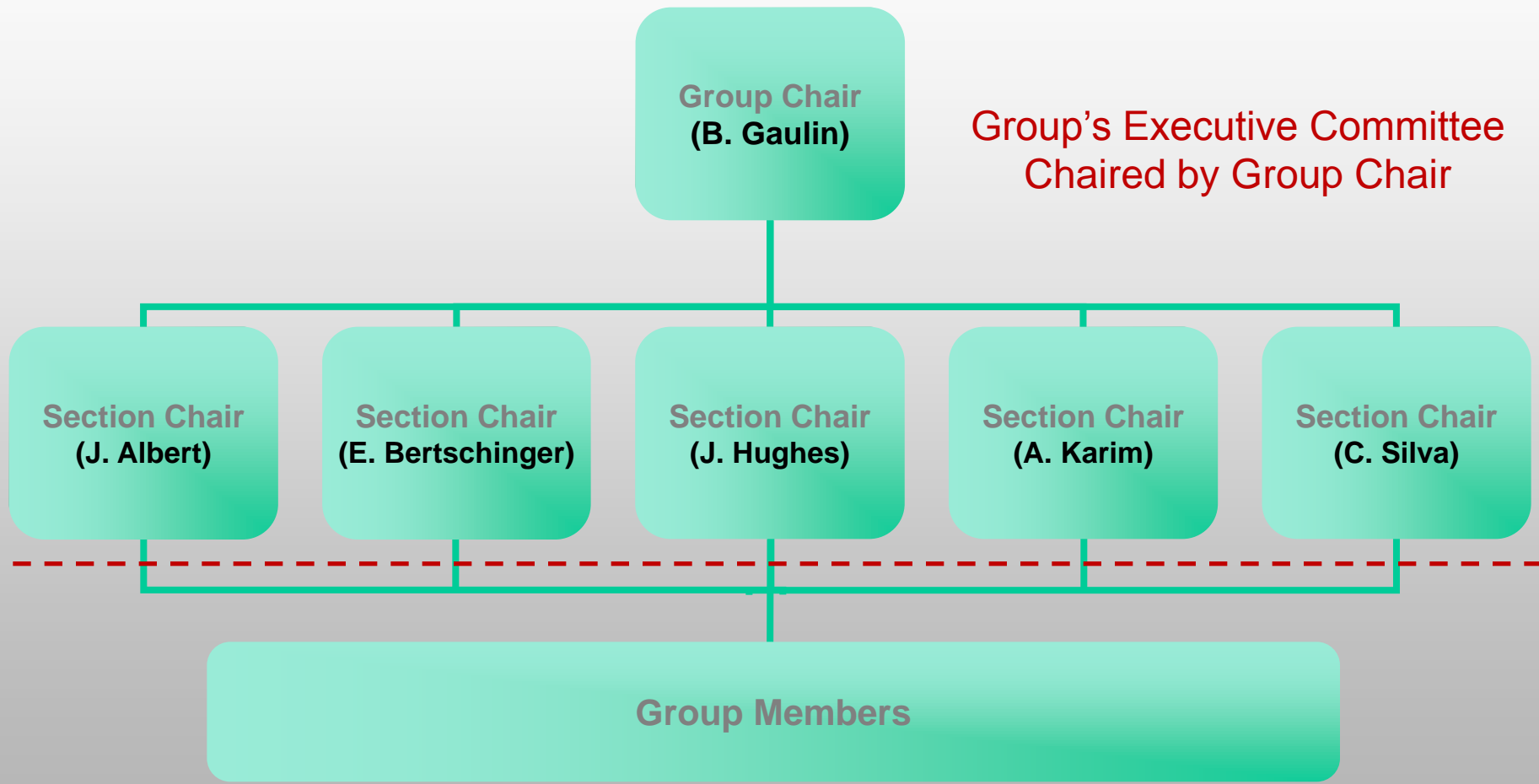
- Kishan Dholakia  
*University of St. Andrews*
- Karl Gebhardt  
*University of Texas at Austin*
- David Jaffray  
*University Health Network*
- Barbara Jones  
*IBM*
- Robin Kaiser  
*Institut non-linéaire de Nice*
- Mikko Karttunen  
*University of Western Ontario*
- Reinhard Kienberger  
*Technische Universität München  
and Max-Planck-Institut für Quantenoptik*
- Martin Leach  
*Institute of Cancer Research, University of London*
- Jérôme Lesueur  
*École supérieure de physique et de chimie  
industrielles*
- Alexander Levine  
*University of California, Los Angeles*
- Mike Mauel  
*Columbia University*
- Lee Mundy  
*University of Maryland*
- Jun Nogami  
*University of Toronto*
- Christopher Palmstrom  
*University of California, Santa Barbara*

# Physics Evaluation Group (1505)

## 2013 Membership

- David Parker  
*University of Birmingham*
- Saverio Pascazio  
*Universita di Bari*
- Jean-Luc Pelouard  
*Laboratoire de photonique et de nanostructures, CNRS*
- Stephen Pistorius  
*CancerCare Manitoba*
- Wojciech Rozmus  
*University of Alberta*
- Gabriela Slavcheva  
*University of Southampton*
- Gregory Stewart  
*University of Florida*
- Mark Tuominen  
*University of Massachusetts, Amherst*
- Mark Walton  
*University of Lethbridge*
- David Weitz  
*Harvard University*
- Edward Wright  
*University of California, Los Angeles*
- William Whelan  
*University of Prince Edward Island*
- Julia Yeomans  
*University of Oxford*

# Organization of Contributors to the Peer Review Process – EG 1505



# Research Topics and Sections in EG 1505

- PHYS 01: Astronomy, Astrophysics and Cosmology
- PHYS 02: Near-Earth and Space Physics
- PHYS 04: Quantum Condensed Matter
- PHYS 05: Statistical, Soft Condensed Matter, and Mesoscopic Physics
- PHYS 09: Biological Physics
- PHYS 06: Theoretical & Mathematical Physics
- PHYS 07: General Physics
- PHYS 08: Medical Physics

# Major Pre-Competition Activities

## 2013 Discovery Grants Competition

### ▪ August

- Applicants submitted Form 180, *Notification of Intent to Apply*.
- Orientation material provided to members.

### ▪ September - October

- Members provided comfort ratings to review each application.
- Preliminary assignment of applications to Sections was made.
- Chairs held teleconferences:
  - To confirm assignment of applications to Sections.
  - To assess need to seek/offer additional expertise from/to other EGs for each application and discuss possible transfers to/from other EGs.
- Chairs identified 1<sup>st</sup> internal reviewer for each application.
- First internal reviewers selected 5 external referees for each application.
- NSERC contacted external referees (all 5 for each application) to probe their willingness to participate; followed-up with first internal reviewers if additional names were needed.

# Major Pre-Competition Activities

## 2013 Discovery Grants Competition

### ■ November / December

- Chairs' meeting in Ottawa (November 17, 2012) – Based on the full proposals:
  - Determined the most appropriate Evaluation Group to take the lead for the review of a certain number of applications.
  - Finalized the Section assignment of a few applications within the Physics Evaluation Group.
- New members' orientation meeting in Ottawa (November 18, 2012).
- Assignment of 2<sup>nd</sup> internal reviewer and additional 3 readers (to add to 1<sup>st</sup> internal reviewer) for each application – 5 internal reviewers in total.
- Establishment of competition schedule.
- Applications and assignments provided to members.



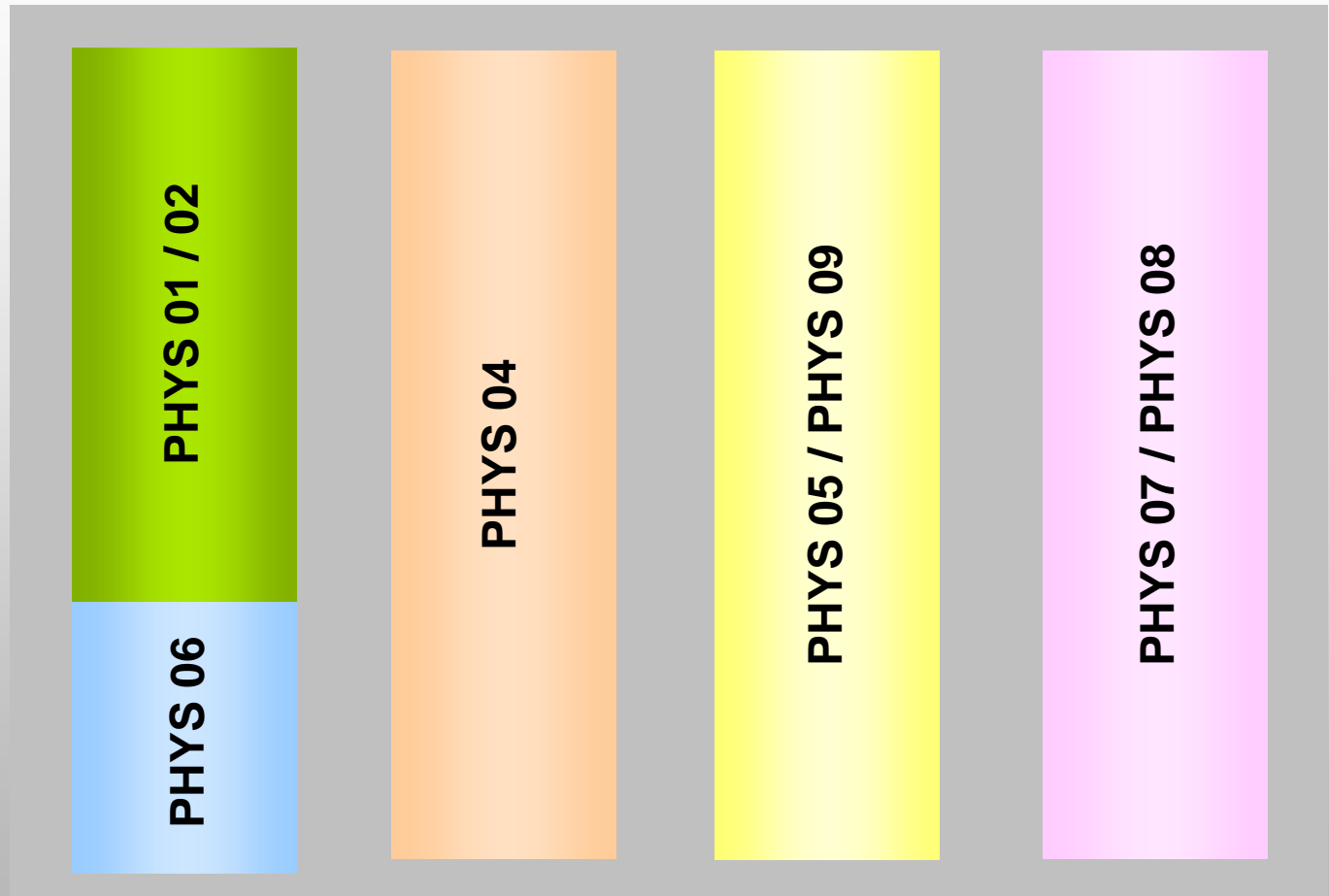
# Organization of Competition Week

## 2013 Discovery Grants Competition

- Monday, Feb. 4<sup>th</sup> to Wednesday, Feb. 6<sup>th</sup>
  - Orientation.
  - Review of Discovery Grants applications.
  - Policy meeting.
- Thursday, Feb. 7<sup>th</sup>
  - Executive Committee meeting.

# Organization of Competition Week 2013 Discovery Grants Competition

Conference  
model  
with **parallel  
streams**



*Schematic representation of the Streams organization*

# Overall Statistics<sup>1</sup> (All EGs)

## 2013 Discovery Grants Competition

	Success rate (%)	Average Grant
Early-Career researchers (ECR)	60	\$27,659
Established researcher (ER) applicants who held a grant	76	\$36,062
Applicant not previously holding a grant <sup>2</sup>	30	\$27,597

1. Includes Discovery and Subatomic Physics (Individual and Team) Grants

2. Includes returning unfunded applicants and experienced researchers submitting a first application

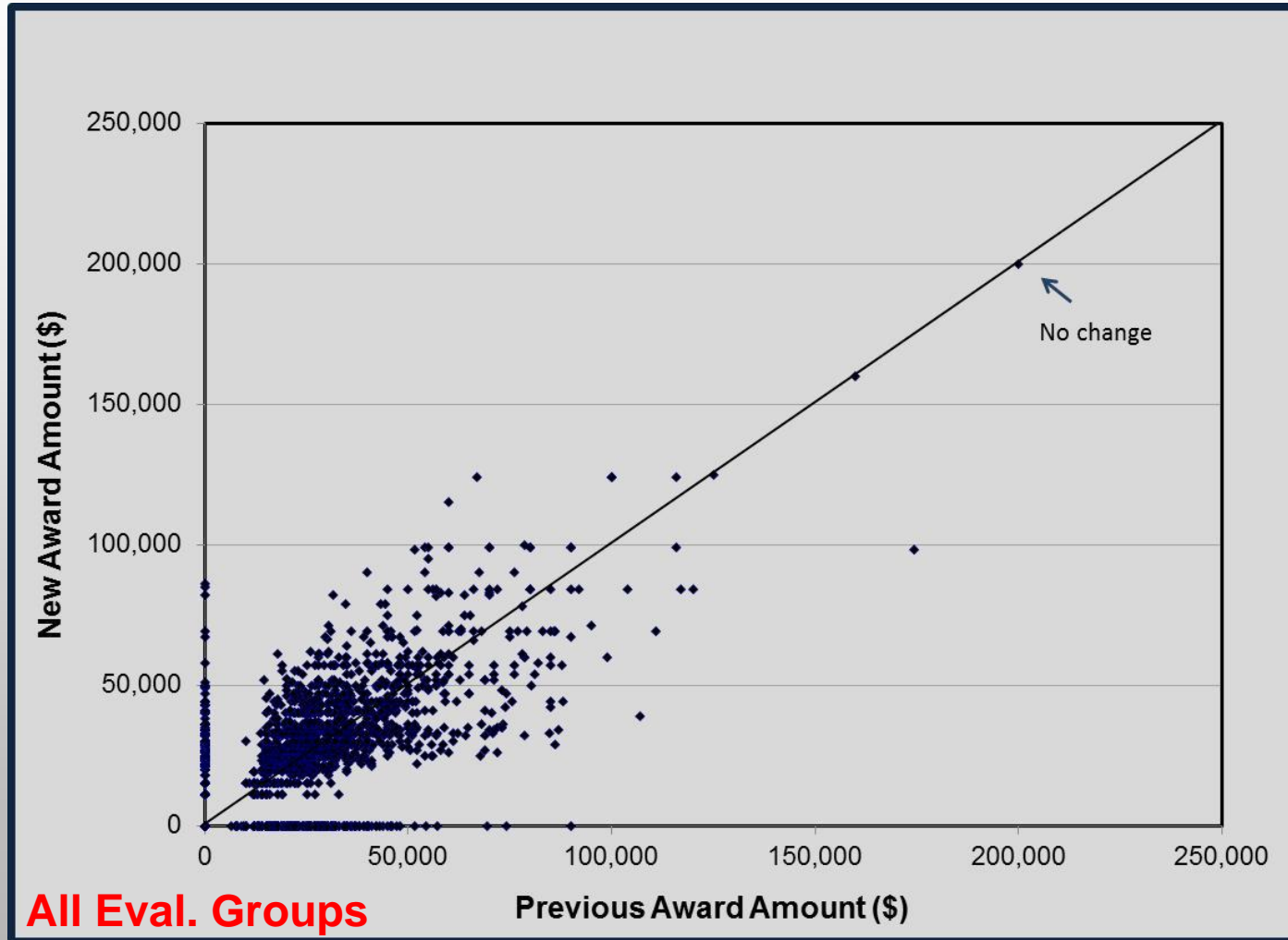
- 3,455 applications in total.
- Going into the competition, there were 1,853 renewal applicants who held grants of, on average, \$30,596; after the competition, there are 2,026 funded researchers at an average grant level of \$33,472.

# Overall Statistics (All EGs)

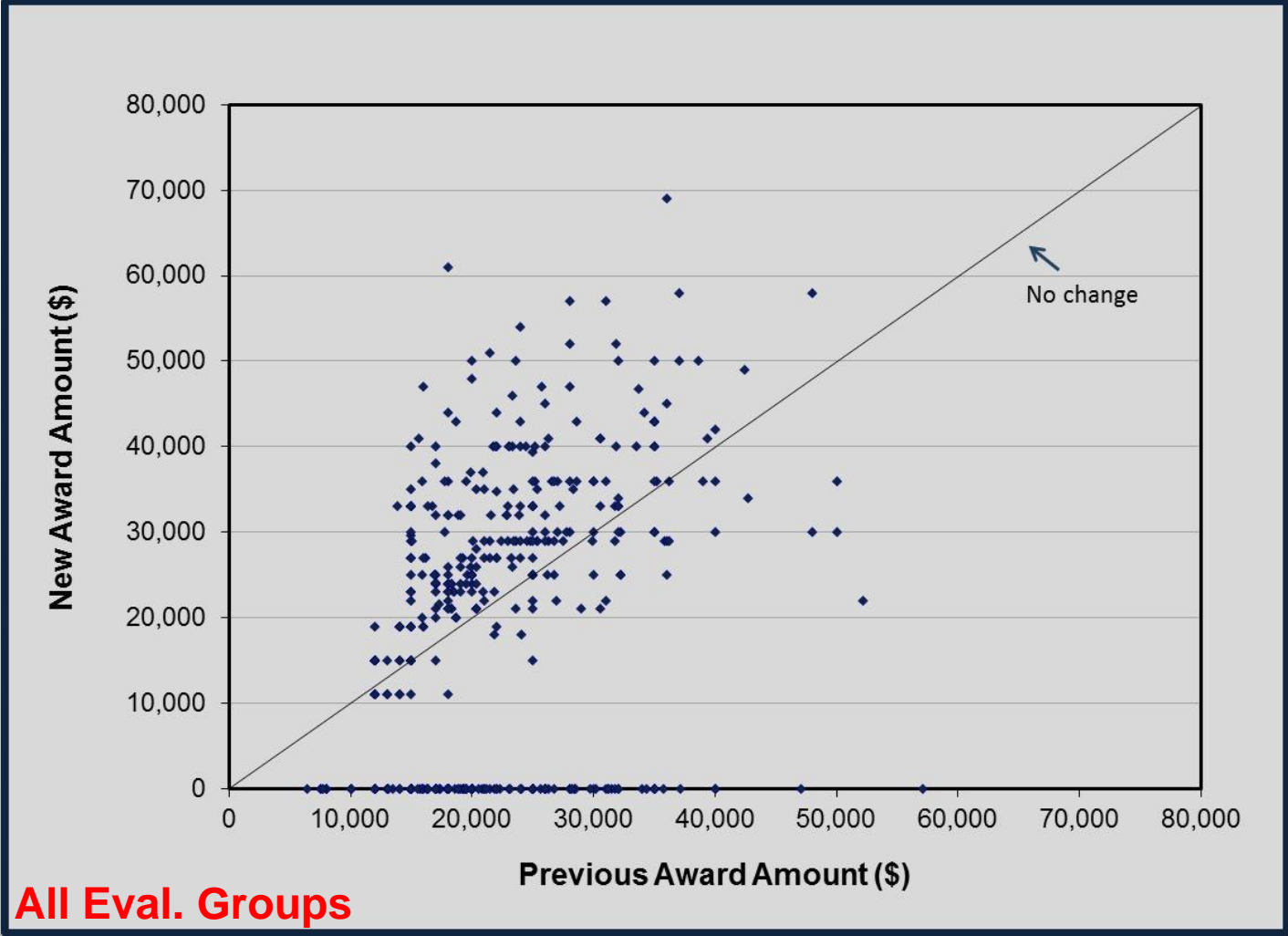
## 2013 Discovery Grants Competition

- NSERC continued to put a strong emphasis on giving Early-Career Researchers (ECRs) a chance to demonstrate their potential and exceeded the minimum target success rate of 50% recommended in the International Review of the NSERC Discovery Grants Program.
- In *Budget 2011*, NSERC was allocated additional funding "to support outstanding research in the natural sciences and engineering fields, such as the Strategy for Partnerships and Innovation (SPI)." NSERC is devoting half of this money to enhance the Discovery Grants of ECRs in the form of supplements to their grants.
- These supplements of a value of up to \$5,000 per year are included in the awarded amounts and reflected in the statistics presented in these slides.

# Change in Grant Level for all Est. Researchers 2013 Discovery Grants Competition



# Change in Grant Level for all 1<sup>st</sup> Renewals 2013 Discovery Grants Competition



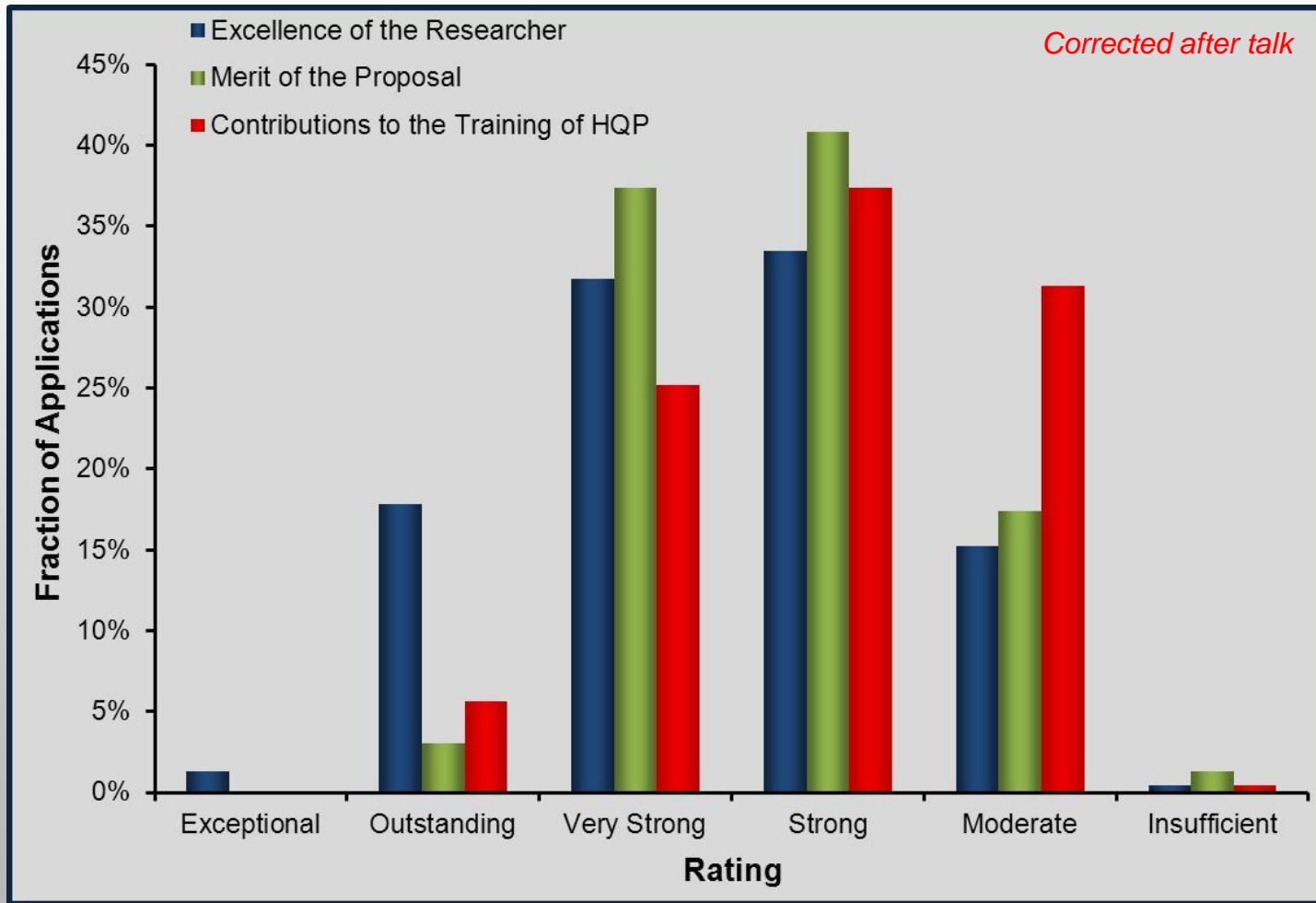
# Results and Statistics – **Physics**

## 2013 Discovery Grants Competition

<b>Discovery Grants</b>	<b>Early-Career Researchers</b>	<b>Established Researchers Renewals</b>	<b>Established Researchers Not Holding a Grant</b>
Number of Applications	32	125	73
Number of Awards	22	113	32
Success Rate	69%	90%	44%
Average Grant	\$25,682	\$38,204	\$26,750
Total Budget	\$565,000	\$4,317,000	\$856,000

# Results and Statistics – Physics

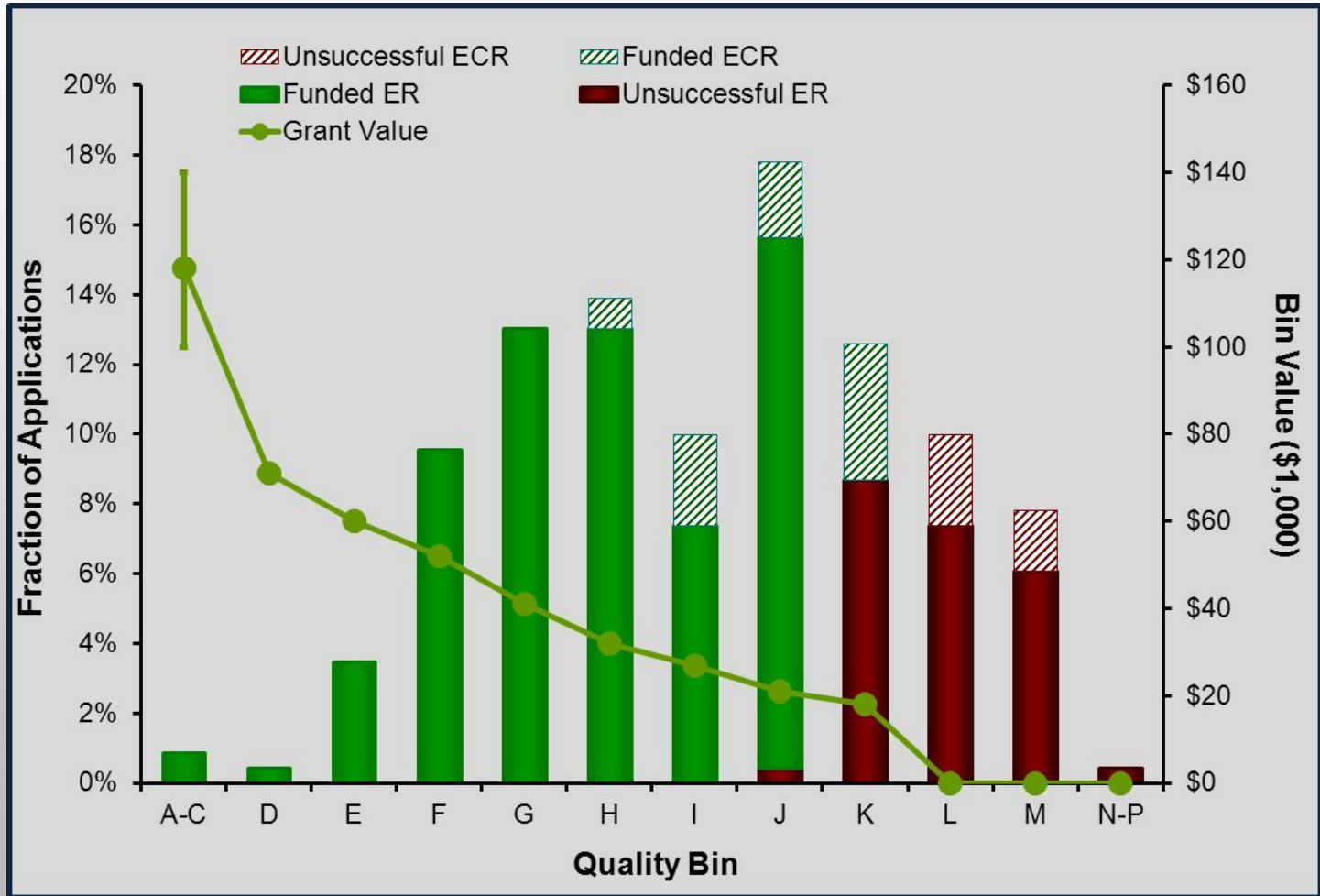
## 2013 Discovery Grants Competition





# Results and Statistics – Physics

## 2013 Discovery Grants Competition



# Results and Statistics – **Physics**

## 2013 Discovery Grants Competition

- Always a challenging task of balancing the amounts to be awarded (i.e., assigned to merit bins) in relation to the number of applicants funded.
- **For Physics:**
  - **ER applicants** supported down to merit category J. All applications in category J were supported, except those with fatal flaws.
  - **ECR applicants** supported down to merit category K. All applications in category K were supported.

# Results and Statistics

## 2013 Discovery Grants Competition

[http://www.nserc-crsng.gc.ca/Professors-Professeurs/DiscoveryGrants-SubventionsDecouverte/Index\\_eng.asp](http://www.nserc-crsng.gc.ca/Professors-Professeurs/DiscoveryGrants-SubventionsDecouverte/Index_eng.asp)

# Discovery Accelerator Supplements

## 2013 Competition

- Provide substantial and timely additional resources to a small group of researchers to maximize the impact of *superior* discovery research programs that explore *high-risk transformational* concepts.
  - Transformational research: innovative approaches that can accelerate a research program in new directions and/or have great potential for major breakthroughs.
- Require researchers to have a *well-established* research program.
- *Timeliness* of DAS support relates to the potential for the researcher to capitalize on an opportunity (accelerate progress, maximize impact), such as a recent research breakthrough, a paradigm shift or a new strategy to tackle a scientific problem or research question.

# Discovery Accelerator Supplements

## 2013 Competition

- \$120,000 - typically over three years.
  - Expand the recipient's research group (i.e., students, postdoctoral fellows, technicians);
  - Purchase, or to have access to, specialized equipment; or
  - Other initiatives/resources that would accelerate the progress of their research program.
- Up to 125 Supplements per year; majority is in one of the four priority areas identified by the Federal Government: information and communications technologies; environmental science and technologies; manufacturing; and natural resources and energy.
- Each EG directly assesses and recommends its nominees, in agreement with a set quota.
- **Quota of seven (7) supplements for the Physics EG.**

# Discovery Accelerator Supplements

## 2013 Competition

- During the Discovery Grants deliberations, applicants could be put forward as nominees by reviewers. In such cases, nominees were discussed and rated.
- After the competition, using the ratings, the nominees were ranked.
- The Executive Committee then reviewed the Discovery Grants review material (applications, contributions, external referee reports) of the DAS nominees.
- In a teleconference held in late February, the Executive Committee reviewed and discussed the top two-thirds (ranking) of DAS nominees against the program's objective and criteria.
- A final merit-based ranked list was generated at the end of this review.

# Research Tools & Instruments

## 2013 Competition

- Review carried out by three *ad hoc* review Sections
  - RTI Section 1: Astronomy, Astrophysics and Cosmology / Near-Earth and Space Physics.
  - RTI Section 2: Condensed Matter Physics / Biological Physics.
  - RTI Section 3: General Physics / Medical Physics.

Sections 2 and 3 included experts who are past members of the Physics Evaluation Group, as well as experts who are senior members of the community.

# Research Tools & Instruments

## 2013 Competition

- One Lead reviewer and four Readers assigned to each application.
- Members submitted ratings in a forced flat distribution in advance of the deliberations.
- Scores were compiled; all applications that fell in the middle tier of the rankings, in addition to any flags (members; split votes), were discussed during the deliberations.
- Deliberations held on:
  - Sunday, Feb. 3<sup>rd</sup> (RTI Sections 2 and 3).
  - Wednesday, Feb. 6<sup>th</sup> (RTI Section 1).
- Following deliberations, members could revise any of their individual scores, while a forced flat distribution had to be maintained by each member.



# Research Tools & Instruments – **Physics**

## 2013 Competition Results

<b>Research Tools &amp; Instruments (Category 1)</b>	<b>EG 1505</b>
Number of Applications	<b>101</b>
Number of Awards	<b>24</b>
Success Rate	<b>23.8%</b>
Funding Rate	<b>22.3%</b>
Total Budget (Awarded)	<b>\$2,072,260</b>

# Important Information for the 2014 Competition

# Changes in Application Process for Discovery Grants

- **Major changes** to electronic submission system for grant applications to the 2014 Discovery Grants Competition.
- Applicants will be required to familiarize themselves with new tools and interfaces and to complete a new CV, we recommend that you **start preparing your grant application as soon as possible**.

# Changes in Application Process for Discovery Grants

- Notification of Intent to Apply (NOI) and full application must be submitted through NSERC's new [Research Portal](#). 
- Applicants and co-applicants must complete and submit NSERC's version of the [Canadian Common CV \(CCV\)](#) at the NOI and application stages. 
- Notification of Intent to Apply (NOI) must be submitted to NSERC by the **deadline date of August 1, 20:00 Eastern.** 
- No NOI by deadline = Not possible to submit a full application.

# Changes in Application Process for Discovery Grants

- Instructions are available on NSERC's Web site.
- Posting of updated literature will be ongoing over the next few months.
  - Researchers are encouraged to visit NSERC's Web site and review updated instructions.
- Since completing the entire CCV for the first time can be tedious, applicants to the 2014 competition should:
  - **Start preparing their CCV as soon as possible.**
  - Focus on entering the information (e.g., contributions) for the last **six years** first. The remaining information can be entered at a later time.
  - Focus on the NSERC "template". There are several data elements in the CCV that other agencies wish to collect, but NSERC does not.

# Changes in Application Process for Research Tools & Instruments Grants

- Starting this year, NSERC will be holding a smaller-scale national RTI competition in which universities are provided with a quota of applications that they can submit to NSERC.
- This change comes as a result of the extensive consultations with the research community on the future of the RTI Grants Program.
- The quotas to universities are based on the number of NSERC-funded researchers supported at each institution, with a minimum quota of two applications.
- The NSERC **criteria** for evaluation **remain the same**.

# Changes in Application Process for Research Tools & Instruments Grants

- To apply to the RTI program, researchers must first submit an application to their institutions, by the internal deadlines of the latter.
- Each institution will perform its own internal review process and submit the selected applications to NSERC by the **October 25** deadline.
- NSERC continues to receive the **RTI** applications (**Form 101** and **Form 100**) through the NSERC on-line system.
- The updated program description and instructions will be available at the beginning of August.

# Communication Tools for the Discovery Grants Program (Reminder)

- Since 2011, new ways to communicate program information and details about the peer review process to prospective applicants.
- Two [videos](#) are available in the [Professors](#) section of NSERC's Web site.
  - Tips on applying for an NSERC Discovery Grant.
  - Demystifying the review process for NSERC Discovery Grants.



# Resources

- Program Officer overseeing the Physics Evaluation Group.
  - Ainsley McFarlane; [ainsley.mcfarlane@nserc-crsng.gc.ca](mailto:ainsley.mcfarlane@nserc-crsng.gc.ca)
- NSERC's Web site.
  - Research Portal:  
[http://www.nserc-crsng.gc.ca/ResearchPortal-PortailDeRecherche/Index\\_eng.asp](http://www.nserc-crsng.gc.ca/ResearchPortal-PortailDeRecherche/Index_eng.asp)
  - CCV:  
<https://ccv-cvc.ca/indexresearcher-eng.frm>
  - Instructions:  
[http://www.nserc-crsng.gc.ca/ResearchPortal-PortailDeRecherche/Instructions-Instructions/index\\_eng.asp](http://www.nserc-crsng.gc.ca/ResearchPortal-PortailDeRecherche/Instructions-Instructions/index_eng.asp)