



Conseil de recherches en sciences
naturelles et en génie du Canada

Canada

2016 Competition

Subatomic Physics Evaluation Section

Report from the SAP Section Co-Chair to the Community

Presented by: Adam Ritz, University of Victoria

**Congress of the Canadian Association of Physicists
June 12, 2016 – Ottawa, ON**



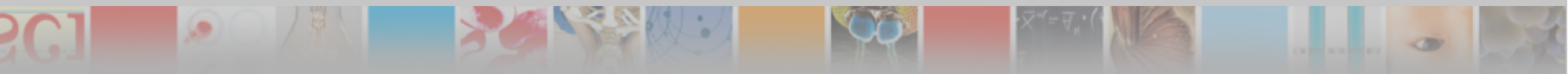
Natural Sciences and Engineering
Research Council of Canada

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Outline

- Subatomic Physics Evaluation Section (SAPES)
- Pre-competition Activities
- Large Project Day and Competition Week
- Rounds 1, 2 and 3
- Competition Financial Report
- Evolution of Awards
- Discovery Accelerator Supplements
- Policy Matters
- Information for the 2017 Competition



Subatomic Physics Evaluation Section

2016 Competition

Name	Institution	Term	Expertise
Georges Azuelos	TRIUMF & Université de Montréal	2015-2016	Experimental IEP & HEP
Yorick Blumenfeld	Institut de physique nucléaire d'Orsay	2013-2016	Experimental NP
Karsten Heeger	Yale University	2015-2018	Experimental HEP, Astro.
Greg Landsberg	Brown University	2015-2016	Experimental HEP
Heather Logan	Carleton University	2015-2018	Theoretical HEP
Augusto Macchiavelli	Lawrence Berkeley National Laboratory	2013-2016	Experimental NP
Naomi Makins	University of Illinois at Urbana-Champaign	2014-2017	Experimental IEP
Gabriel Martinez Pinedo	Technische Universität Darmstadt	2015-2018	Theoretical NP
Mark Messier	Indiana University	2013-2016	Experimental HEP
Adam Ritz	University of Victoria	2014-2017	Theoretical HEP, Strings
Neil Spooner	University of Sheffield	2013-2016	Experimental HEP

- 11 instead of the usual 12 members, as Eckhard Elsen stepped down before completing his term;
- Karsten Heeger and Naomi Makins participated remotely.

The Subatomic Physics Evaluation Section

Support to Operations

- Group Chair
 - Li-Hong Xu; University of New Brunswick
 - Monitors consistency of deliberations for Physics in general; provides advice on procedures and policies as needed
 - Not a member; does not participate in reviews/votes; did not attend SAP Competition week in 2016.

- NSERC Staff
 - Shashini Jayaratne; Program Assistant
 - Kim Bonnet / Michèle Takoff; Program Officers
 - Sarah Overington; Team Leader
 - Elizabeth Boston; Director

**Many thanks
from SAPES!!**

The Subatomic Physics Evaluation Section

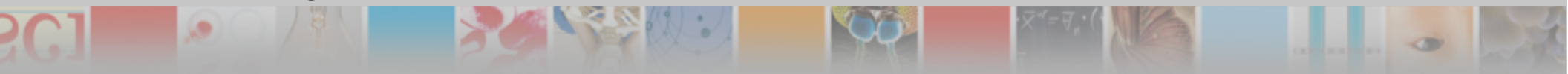
- Funded through an **independent envelope, with its suite of programs -- unique mechanism at NSERC**
- Evaluates applications to various Subatomic Physics programs
 - Individual and Project Discovery Grants
 - Research Tools and Instruments (RTI - Category 1, 2 or 3) Grants
 - Major Resources Support (MRS) Grants
- This comprehensive approach is essential
 - Complexity and inter-dependency of many proposals
 - Country-wide collaborations among individuals, groups, universities, and national research organizations
 - Long-term and large-scale international projects and commitments
 - Possibility to exchange funds between the various programs as a function of the priorities of the community and the pressures it faces

Pre-Competition Activities

- By **August 1st**, applicants submit:
 - Notification of Intent to Apply (NOI) for a Subatomic Physics Discovery Grant through the Research Portal
 - Notification of Intent to Apply (NOI) for a SAP Major Resources Support Grant through the Research Portal
 - Notification of Intent to Apply (NOI) for a SAP Research Tools and Instruments - Cat. 2/3 Grant through the Research Portal
- NSERC and SAPES Co-Chairs identify proposals for Expert Reviews
- By **late September**:
 - Members provide their comfort level to review each application
 - NSERC and Section Co-Chairs select members to be 1st, 2nd and 3rd (where required) internal reviewers

Pre-Competition Activities

- Applicants submit applications to NSERC:
 - October 1:** RTI applications for equipment over \$150k (Cat 2 & 3), MRS applications, and Project Discovery applications requesting more than an average of \$500k per year
 - October 25:** RTI applications for equipment up to \$150k (Cat 1)
 - November 1:** Individual and Project Discovery applications requesting less than an average of \$500k per year
- **November 3:** SAPES 2016 Orientation & Policy meeting – held by teleconference
- Fall assessment of NOI's crossing the boundaries within Physics, and other Evaluation Groups
- **Mid-December:** All applications are sent to SAPES members



Pre-Competition Activities

- Reviews by *ad hoc* or standing Committees
 - ATLAS-Canada (RTI-Cat 3 only)
 - Via teleconference (Nov. 17 and Dec. 4)
 - Belle-II
 - Via teleconference (Nov. 16 and 30)
 - DEAP-3600 project (Nov. 6-7, Ottawa)
 - IPP (Jan. 11-12, Vancouver)
 - SNO+ (Nov. 8-9, Ottawa)

Large Project Day

LPD 2016 was held March 6, 2016 in Ottawa:

- All participants receive SAPES questions in advance
- This year's LPD participants (by collaboration in alpha order):
 - Upgrades to the **ATLAS** Detector at the Large Hadron Collider
 - The **Belle II Project** & Beam Background Monitors for the Belle II Experiment
 - **DEAP-3600** Operation and Analysis
 - **Institute of Particle Physics**
 - Search for Dark Matter with **PICO**
 - **SNO+** Data Taking and Operations: Years 1-2
 - **Ultra Cold Neutrons** at TRIUMF
- *In camera* meetings with institutional representatives:
 - **CFI, CINP, IPP, Perimeter Institute, SNOLAB, TRIUMF,**
and Chair of the **Long Range Plan** Committee

Competition Week

- Competition week: **March 7 - 11, 2016** in Ottawa
- Assessment of applications done in 3 rounds
 - Round 1: recommend efficient budget for supported research activities
 - Round 2: reconsider funding recommendations to fit into available budget following consistent and fair re-assessment of *all* the applications
 - Round 3: further reductions following agreed upon approach established by SAPES at conclusion of Round 2
- Deliberations followed NSERC's policies and guidelines throughout all rounds of competition
- NSERC's President Mario Pinto, VP Pierre Charest, and Director Elizabeth Boston were present for some deliberations

Competition Details

- 58 applications
- Total requested: \$14.903M
- Available funds: \$7.403M
- Projected average funding rate was 50%

Compare to:

2007	2008	2009	2010	2011	2012	2013	2014	2015
55%	66%	66%	57%	61%	69%	53%	52%	64%

Competition Budget

SUBATOMIC PHYSICS ENVELOPE MULTI-YEAR COMMITMENTS BY CATEGORY Beginning of 2016 Competition					
	2015	2016	2017	2018	2019
RTI - COMMITTED	\$285,285	\$85,000	\$35,000	\$0	\$0
RTI - NEW (2016 Competition)	\$0	\$0	\$0	\$0	\$0
RTI - TOTAL	\$285,285	\$85,000	\$35,000	\$0	\$0
THEORY - COMMITTED	\$3,409,706	\$2,692,800	\$2,096,300	\$1,413,100	\$949,100
THEORY - NEW (2016 Competition)	\$0	\$0	\$0	\$0	\$0
THEORY - TOTAL	\$3,409,706	\$2,692,800	\$2,096,300	\$1,413,100	\$949,100
EXP OPS** - COMMITTED	\$17,050,470	\$12,607,370	\$7,830,120	\$261,370	\$144,957
EXP OPS - NEW (2016 Competition)	\$0	\$0	\$0	\$0	\$0
EXP OPS - TOTAL	\$17,050,470	\$12,607,370	\$7,830,120	\$261,370	\$144,957
MRS - COMMITTED	\$2,389,444	\$596,207	\$484,173	\$46,000	\$48,000
MRS - NEW (2016 Competition)	\$0	\$0	\$0	\$0	\$0
MRS - TOTAL	\$2,389,444	\$596,207	\$484,173	\$46,000	\$48,000
TOTAL - COMMITTED	\$23,134,905	\$15,981,377	\$10,445,593	\$1,720,470	\$1,142,057
TOTAL - NEW (2016 Competition)	\$0	\$0	\$0	\$0	\$0
GRAND TOTAL	\$23,134,905	\$15,981,377	\$10,445,593	\$1,720,470	\$1,142,057
TOTAL ENVELOPE	\$23,190,811	\$23,351,331	\$23,509,251	\$23,509,251	\$23,509,251
REIMBURSEMENT - FORWARD BORROW FROM PAST COMPETITIONS	-\$22,931	\$32,975	\$0	\$0	\$0
CARRY FORWARD FROM FY2015 / AVAILABLE	\$32,975	\$7,402,929	\$13,063,658	\$21,788,781	\$22,367,194

Round 1

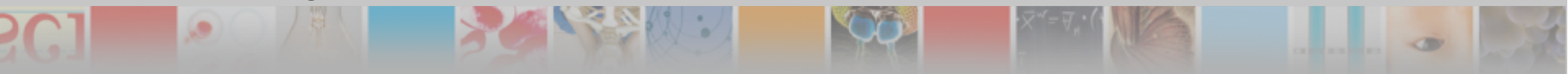
- Members in conflict of interest leave the room
- Presentation by the **first internal reviewer**
- Any new or different comments by the **second internal reviewer**
- Budget related comments by the **third internal reviewer** (only for applications requesting >\$500k per year)
- Discussion by the **entire Section** (or sub-Section)
- Secret electronic voting (on rating criteria & funding)

Any member can “flag” an application.

Members are asked not to tally results to avoid biases.

Round 1

- Full Section deliberations
 - Experimental Individual, Team and Project applications
 - Major RTI applications (Category 2 & 3)
 - Major MRS applications (> \$500k/yr)
- Sub-Section deliberations (in parallel)
 - Theory applications
 - RTI-Category 1 & MRS applications
- Conclusion of Round 1
 - Re-discussed any flagged applications
 - NSERC personnel tally & present the budget

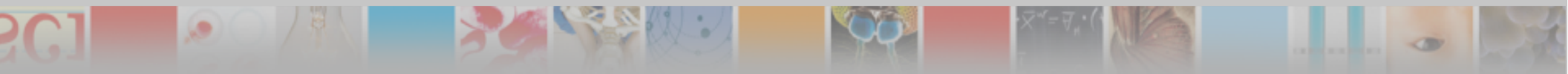


End of Round 1

- Available Funds: \$7.520M*
- Requested: \$14.903M
- Recommended in Round 1: \$10.024M
- Balance: - \$2.504M

- For Round 2
 - Same set of principles applied to all proposals
 - All proposals again assessed strictly on their merits
 - Strict account taken of the evaluations of the four criteria for each proposal (recorded in Round 1)
 - NSERC personnel again tallied the budget

*Adjustments to ongoing awards resulted in an increase in the available funds

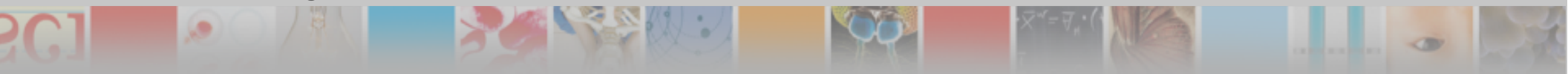


End of Round 2

■ Available Funds:	\$7.520M*
■ Requested:	\$14.903M
■ Recommended in Round 2:	\$8.364M
■ Balance:	- \$844k

For Round 3

- Large awards re-visited for further efficiencies
- Uniform % reduction applied to all remaining Discovery awards
- Multi-year awards re-profiled to balance funding across years



End of Round 3

- Available Funds: \$7.520M*
 - Requested: \$14.903M
 - Recommended in Round 2: \$7.561M
 - Balance: - \$40k
-
- Quota of one (1) Discovery Accelerator Supplement (DAS) for the SAPES in 2016.

Multiyear Commitments at End of Competition

SUBATOMIC PHYSICS ENVELOPE MULTI-YEAR COMMITMENTS BY CATEGORY Beginning of 2016 Competition					
	2016	2017	2018	2019	2020
RTI - COMMITTED	\$85,000	\$35,000	\$0	\$0	\$0
RTI - NEW (2016 Competition)	\$479,875	\$0	\$0	\$0	\$0
RTI - TOTAL	\$564,875	\$35,000	\$0	\$0	\$0
THEORY - COMMITTED	\$2,692,800	\$2,096,300	\$1,413,100	\$949,100	\$0
THEORY - NEW (2016 Competition)	\$592,515	\$686,090	\$686,090	\$601,778	\$601,778
THEORY - TOTAL	\$3,285,315	\$2,782,390	\$1,413,100	\$1,550,878	\$601,778
EXP OPS** - COMMITTED	\$12,547,370	\$7,830,120	\$261,370	\$144,957	\$0
EXP OPS - NEW (2016 Competition)	\$4,747,175	\$2,742,371	\$2,645,471	\$380,541	\$380,541
EXP OPS - TOTAL	\$17,294,545	\$10,572,491	\$2,906,841	\$525,498	\$380,541
MRS - COMMITTED	\$539,000	\$484,173	\$46,000	\$48,000	\$0
MRS - NEW (2016 Competition)	\$1,741,000	\$1,741,000	\$1,741,000	\$0	\$0
MRS - TOTAL	\$2,280,000	\$2,225,173	\$1,787,000	\$48,000	\$0
TOTAL - COMMITTED	\$15,864,170	\$10,445,593	\$1,720,470	\$1,142,057	\$0
TOTAL - NEW (2016 Competition)	\$7,560,565	\$5,169,461	\$5,072,561	\$982,319	\$982,319
GRAND TOTAL	\$23,424,735	\$15,615,054	\$6,793,031	\$2,124,376	\$982,319
TOTAL ENVELOPE	\$23,351,331	\$23,509,251	\$23,509,251	\$23,509,251	\$23,509,251
REIMBURSEMENT - FORWARD BORROW FROM PAST COMPETITIONS	\$32,975	\$0	\$0	\$0	\$0
FORWARD BORROW FROM FY2017 / AVAILABLE	-\$40,429	\$7,894,197	\$16,716,220	\$21,384,875	\$22,526,932

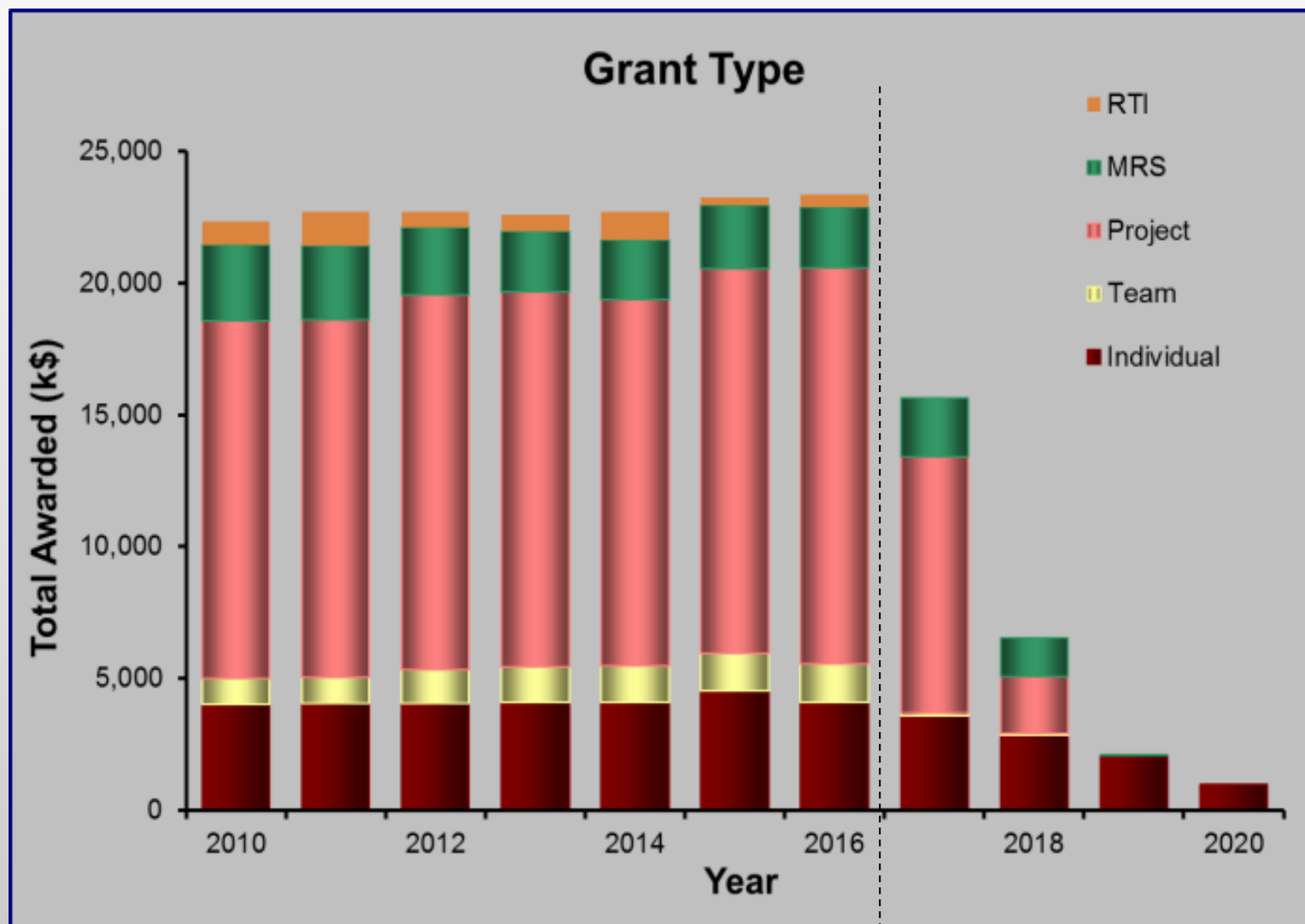
**EXP OPS = Experimental Operations – Includes Project grants and experimental Individual grants

Share of Envelope at End of Competition

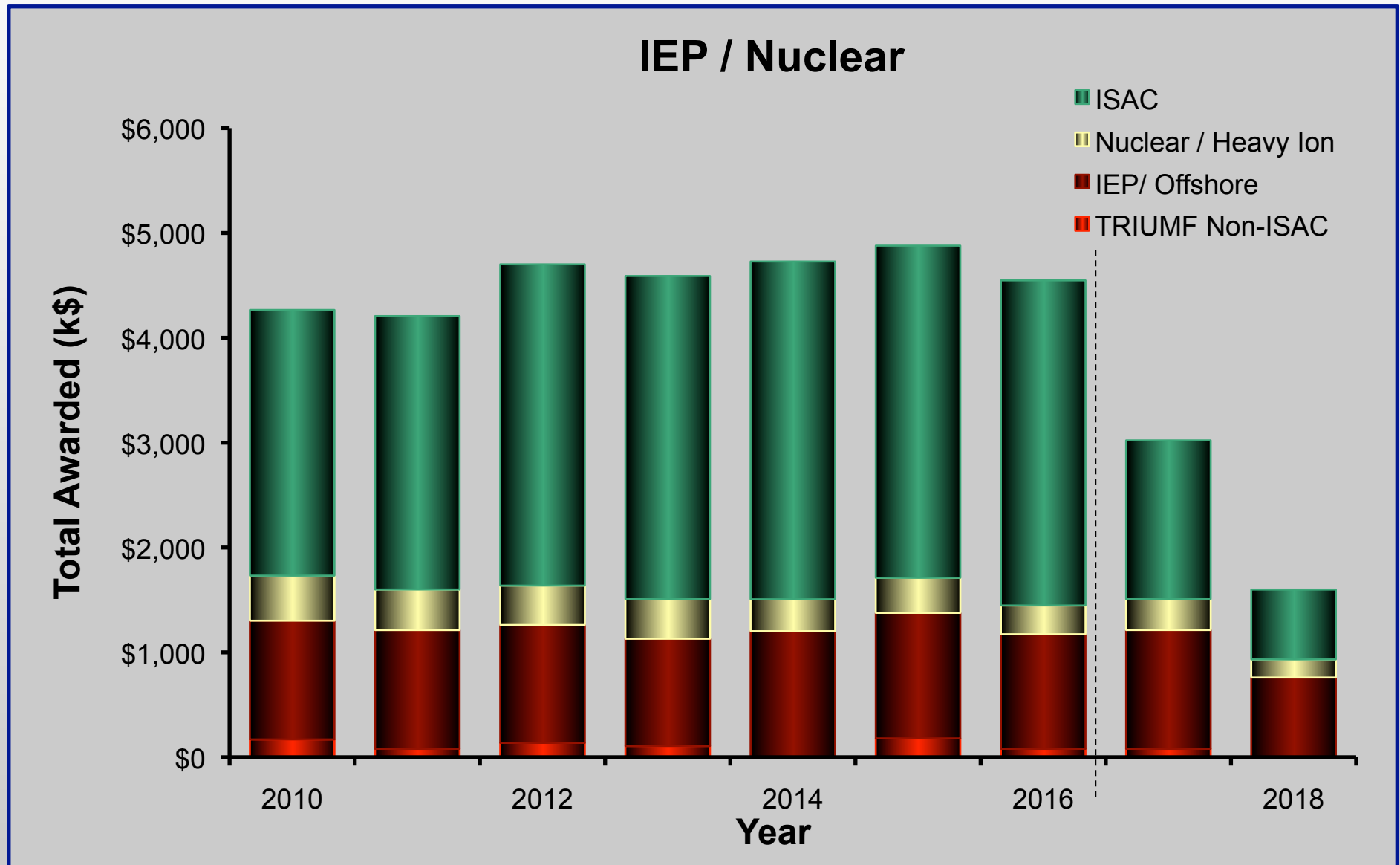
Comparison to Past Years

Subatomic Physics Evaluation Section							
Evolution of Envelope's Shares							
	2016	2015	2014	2013	2012	2011	2010
Theory	14%	15%	14%	14%	14%	14%	14%
RTI	2%	1%	5%	3%	3%	6%	4%
Total Research Ops	84%	84%	81%	83%	83%	80%	82%
Exp. Ops	74%	74%	71%	73%	72%	68%	69%
MRS	10%	10%	10%	10%	11%	13%	13%

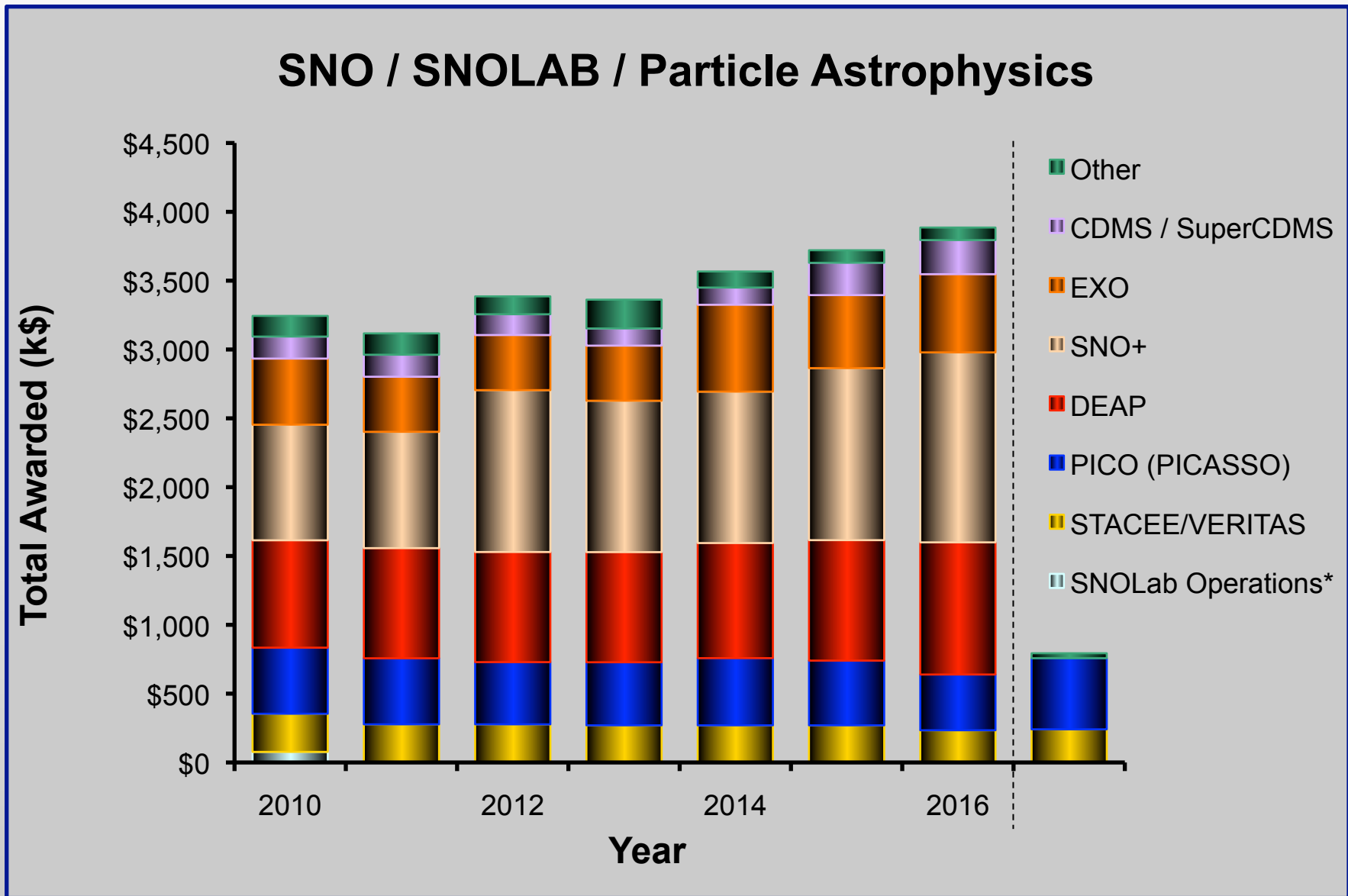
Evolution of SAPES Awards



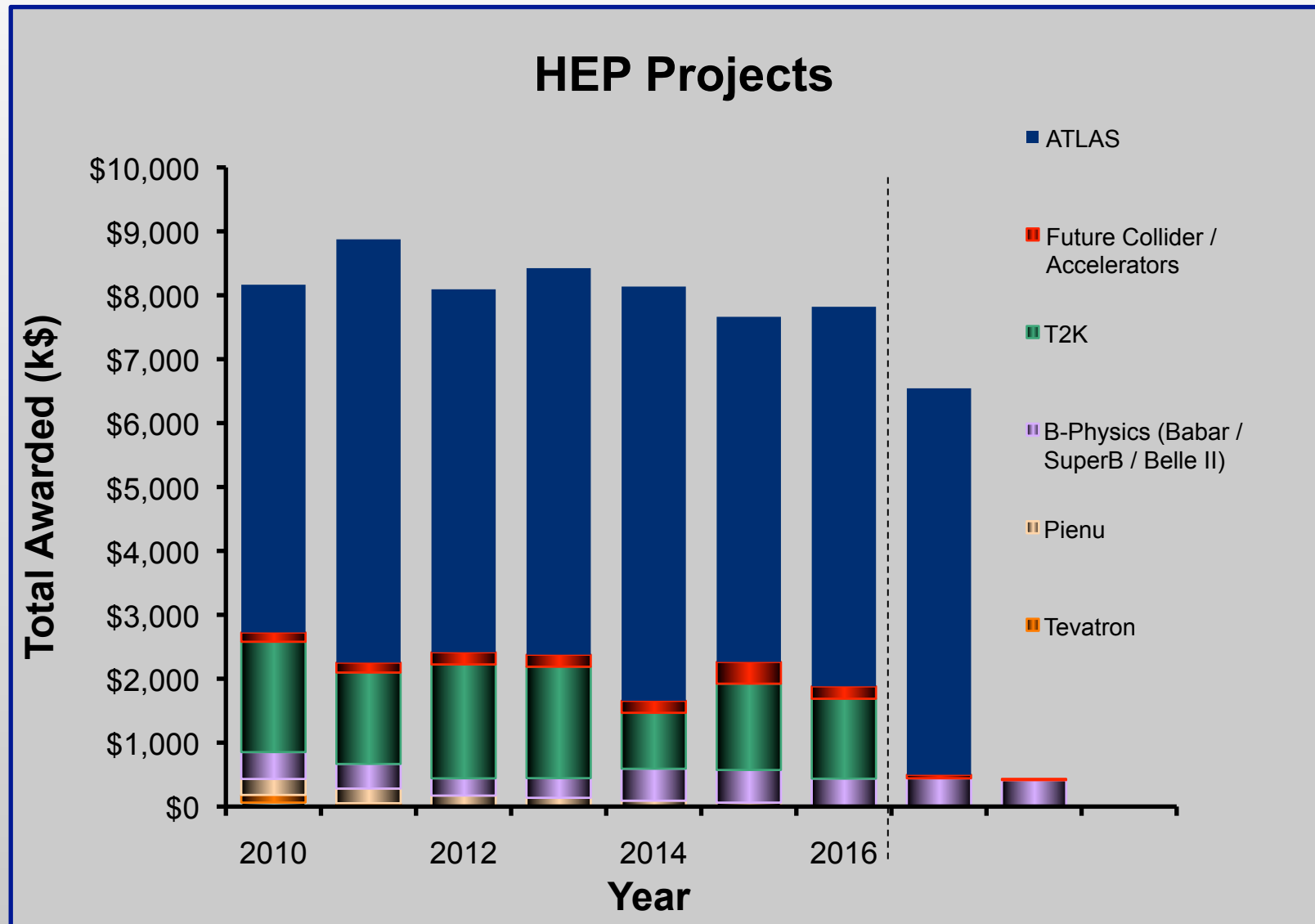
Evolution of SAPES Awards



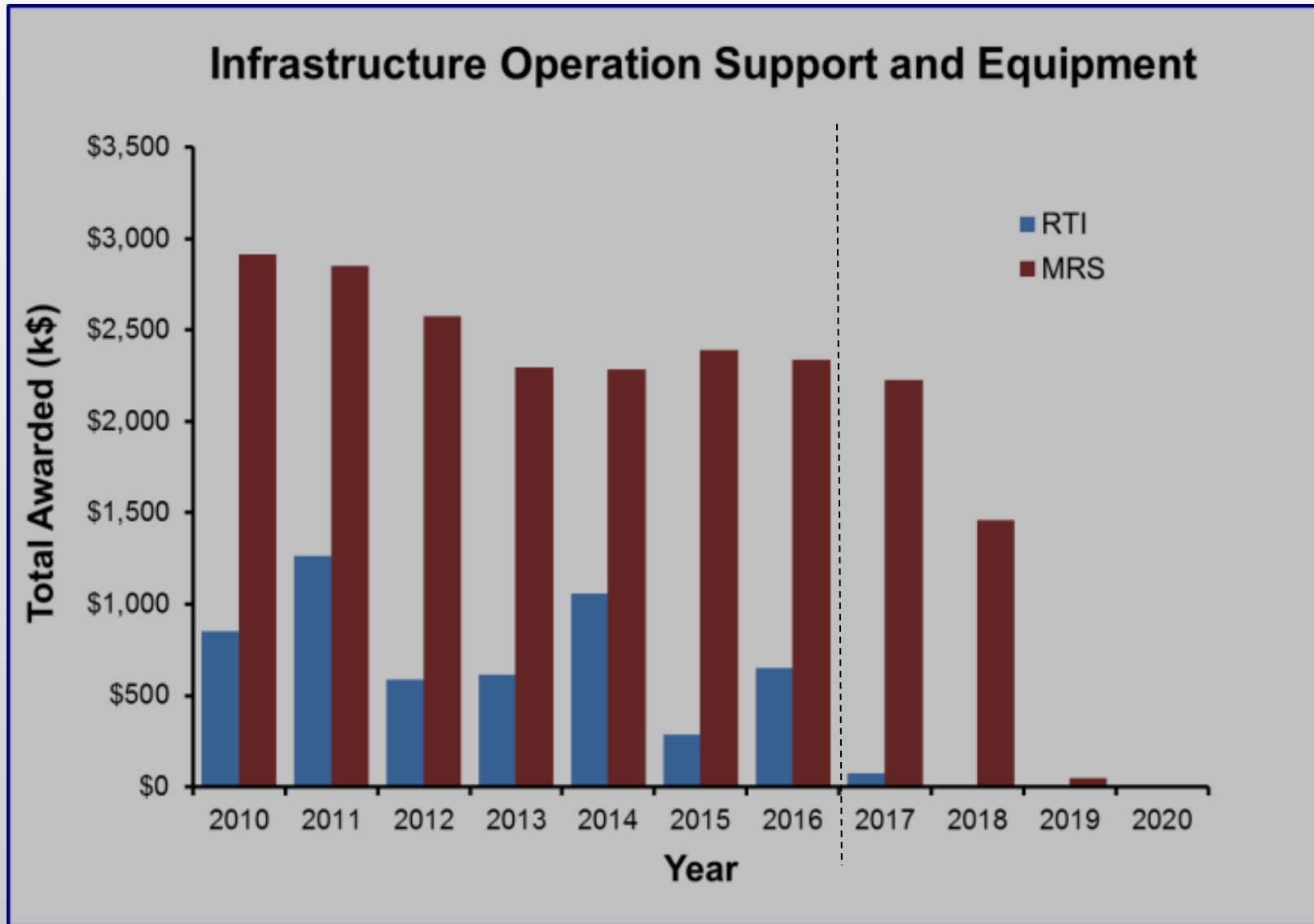
Evolution of SAPES Awards



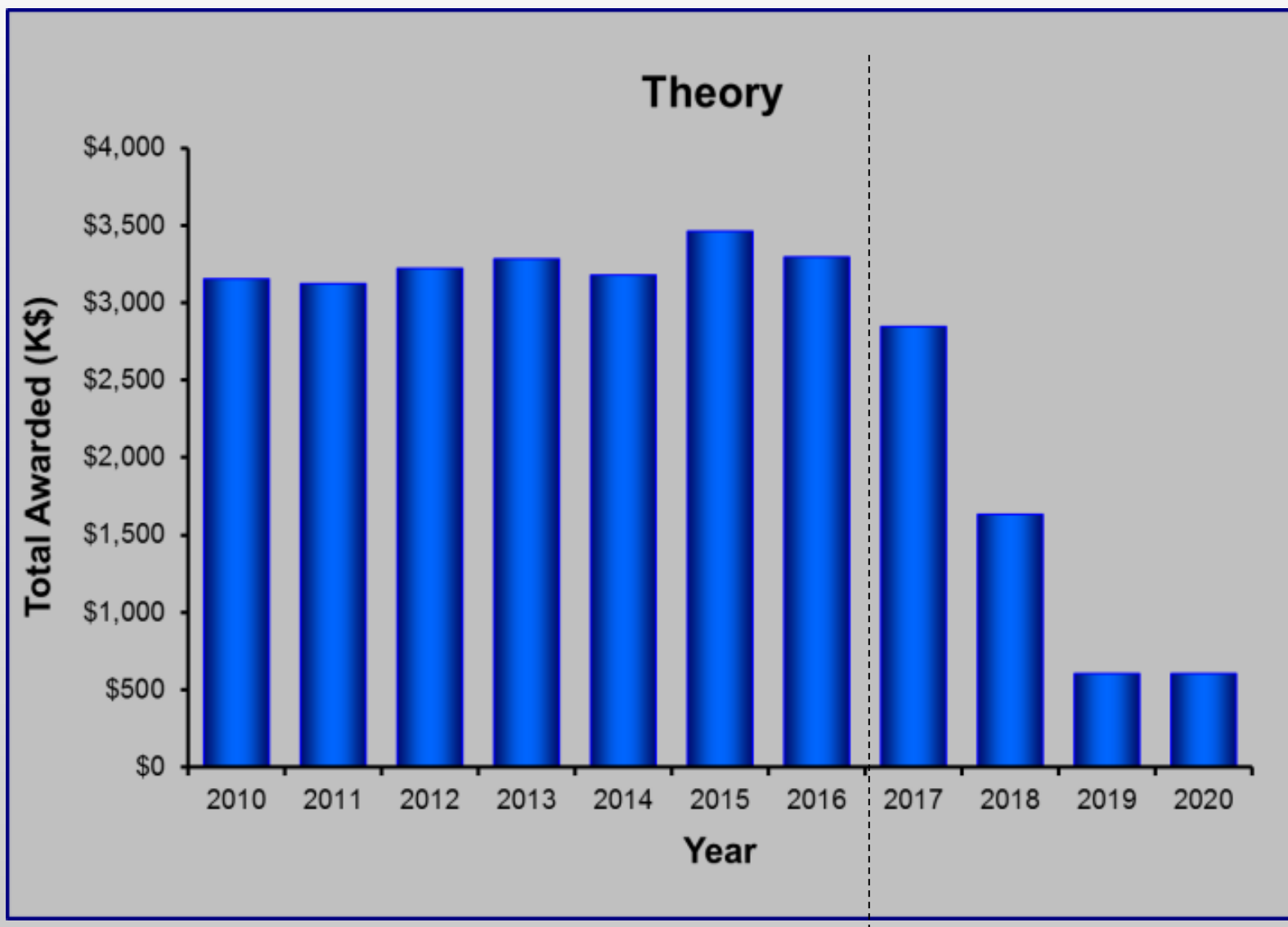
Evolution of SAPES Awards



Evolution of SAPES Awards



Evolution of SAPES Awards



Policy Matters

- Pierre Charest and Elizabeth Boston attended this session in part or in whole.
- Recommendations to NSERC included:
 - Incorporating the **budget pressure** faced by the SAP Envelope in the assessment conducted by Expert Review Committees;
 - Changing the threshold which can trigger an Expert Review to include projects that are ramping up, for example if the requested support is **25% > the current award**;
 - Adapting one of the assessment criteria for Major Resources Support applications, specifically that the application should address the **Excellence of the Resource** (as opposed to the Researcher(s) named on the application) as technical personnel are not as easy to assess;
 - Providing the **hours in FTE** devoted to the proposed research activity of every co-applicant (table format) in an effort to more easily assess the FTE effort across all applications.
 - Continuing to pursue **more coordination between NSERC and CFI** review processes.

Interaction with CFI

- Increased attention and effort made by both agencies
- Regular interactions between NSERC and CFI
 - Meeting on Feb. 29th between SAPES Chair, NSERC and CFI to discuss issues raised through the 2017 LRP process
 - CFI representatives participated in LPD as presenter and as observer throughout afternoon
 - CFI provided reference data to SAPES on request; a list of all SAP-related CFI awards
 - CFI provided complementary data for current LRP process

Canadian representation on SAPES

Proposed approach to applying Tri-Council COI policy for multi-investigator applications review by SAPES

For project, operations and equipment grants submitted to SAPES for review, NSERC will examine each potential conflict (with input from the Chair or another member of the Section as needed) to determine if a real or perceived conflict exists.

In determining if a collaboration and therefore conflict of interest exists, NSERC will focus on demonstration (or not) of shared funding which could be impacted by:

- the distinction between co-applicants and co-users;
- the distinction between primary faculty appointments and various institutional affiliations;
- the distinction between non-research publications (reviews, commentaries) and publications of research results;
- the structure of a network or group with shared funds, as well as the intent of the funding, and method by which funds are distributed.

If an exception is made to current guidelines, the conflict will be disclosed to all members at the beginning of deliberations.

New Funds from the 2016 Budget

From the budget tabled on March 22, 2016:

“Budget 2016 proposes to provide **an additional \$95 million per year, starting in 2016–17, on an ongoing basis** to the granting councils—the highest amount of new annual funding for discovery research in more than a decade”.

- \$30 million annually is proposed for NSERC;
- These funds will support 'discovery research' which in the context of this budget encompasses Discovery Grants including SAP Grants, Research Tools and Instruments Grants as well as scholarship and postdoctoral programs.

Changes to SAP Programs

Effective for the 2017 Discovery Grants competition, NSERC will **no longer accept** Subatomic Physics - Team grant applications.

- This is consistent with the phase-out of team grants in the Discovery Grants program in 2016.
- Applicants are encouraged to continue to incorporate collaborations into their individual applications, or through project grants.
- Existing team grants will continue to receive support until their last installment.

Passing the baton to ...



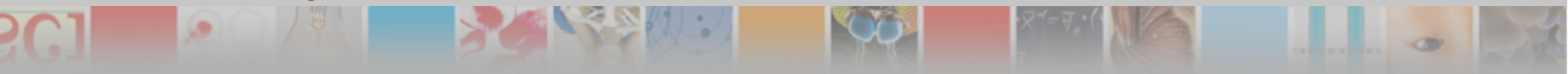
Heather Logan
Carleton University



Karsten Heeger
Yale University

Co-Chairs of the SAPES for 2016-17

Additional Details

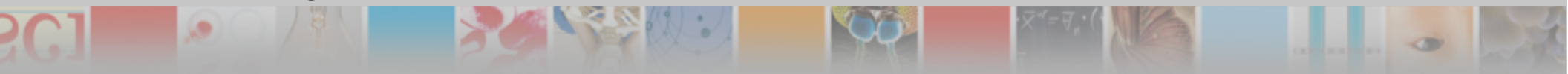


Pre-Competition Activities

- By **August 1st**, applicants submit:
 - **Notification of Intent to Apply (NOI)** for a **Subatomic Physics Discovery Grant** through the Research Portal to assist in the selection of external referees, after which NSERC confirms the assignment of the application to the Subatomic Physics Evaluation Section, and assesses the need for expertise from other Physics Sections (or even other Evaluation Groups)
 - **Notification of Intent to Apply (NOI)** for a **Major Resources Support** Grant to assist in determining the review mechanism
- By late September Members provide their comfort level to review each application;
- Together NSERC and Section Co-Chairs select members to be 1st, 2nd and 3rd (where appropriate) internal reviewers;
 - First internal reviewer selects external reviewers** (Discovery – Individual & Project)
 - Mix from applicant's list and others
 - No conflicts of interest (for example no applicants or co-applicants currently applying)
 - Mix of Canadian and International reviewers

Pre-Competition Activities

- Applicants submit applications to NSERC
 - **October 1:** RTI applications for equipment over \$150k (categories 2 and 3), MRS applications, and Project Discovery applications requesting more than an average of \$500k per year
 - **October 25:** RTI applications for equipment up to \$150k (category 1)
 - **November 1:** Individual and Project Discovery applications requesting less than an average of \$500k per year
- NSERC and SAPES Co-Chairs identify proposals for Expert Reviews
 - One- to two-day review by an international committee of experts
 - Could include Section members (except 1st internal reviewers)
 - Section Co-Chair (or substitute) as *observer*
 - Report, including funding recommendations, is made available to SAP Section before competition week (except those in conflict)



Pre-Competition Activities

- SAPES orientation and policy meeting
 - November 3, 2015 via teleconference
 - Presentation and discussion of operating and review procedures
 - Review of preliminary competition budget
 - Q&A period with CINP and IPP directors regarding jointly prepared document on context of Canadian research environment

Pre-Competition Activities

- Mid-December: All applications are sent to SAPES members
 - members read all applications, except:
 - Those for which they are in conflict
 - Theory, RTI-1 and MRS (< \$500k/yr) typically only need to be read by members of the respective sub-Sections
 - members *must not discuss* the applications with other members or the applicants
 - 1st and 2nd reviewers carry out an in-depth assessment of the applications assigned to them
 - 3rd reviewers (for applications requesting > \$500k/yr) carry out an in-depth assessment of the budget

Pre-Competition Activities

- Fall assessment of NOI's by the Physics Section Chairs
 - Review applications crossing the boundaries of two or more Sections within the Physics Evaluation Group (EG) or related to a discipline other than physics
 - Identify Section that should take the lead for the review and determine need to provide/receive expert input to/from other Physics Sections or EG
 - Outcome
 - **One** application submitted to SAPES was transferred to the Physics EG
 - **Five** applications which were submitted to Physics EG in error were transferred to SAPES
 - For **two** applications, SAPES received expert input from members of the Physics EG with relevant expertise
 - Members of SAPES participated in the review of **two** Individual Discovery grant applications in other Sections of the Physics EG

Round 3 – Discovery Accelerator Supplements

- Provides substantial and timely resources to researchers who have a superior research program that is **highly rated in terms of originality and innovation**, and who show strong **potential to become international leaders** within their field.
- These additional resources should enable a researcher with an **established research program** to **capitalize on an opportunity**, such as a recent research breakthrough, a paradigm shift, or a new strategy to tackle a scientific problem or research question.
- The SAP Section directly recommends candidates, in agreement with a set quota.
- Quota of one (1) for the SAPES in 2016.

Canadian representation on SAPES

Starting point – summary of points raised by SAP community in 2015 re: interpretation of COI policy

- NSERC recognizes the importance of Canadian representation on the Evaluation Section, as emphasized by SAPES members and the broader research community.
- Several barriers exist, including **Conflict of Interest guidelines**.
- Feedback was received from SAPES, IPP, CINP on the current guidelines:
 - General sense that these are too strict in the definition of what constitutes *collaboration*;
 - For large projects, the actual relationship between reviewer and participant should be assessed to determine if a real or perceived conflict exists. E.g.:
 - co-applicants on an MRS grant do not necessarily interact directly or collaborate on research;
 - some large grants have very separate sub-projects;
 - In these situations, there should be some flexibility to examine conflict on a case-by-case basis.

Canadian representation on SAPES

Approach to Recruitment

During the membership process for 2016 NSERC:

- Developed a plan looking 5 years ahead;
- Began recruiting Canadian experimentalists years in advance of the actual start date of their membership term in order to:
 - ensure optimal timing for these members with respect to their other responsibilities (i.e. they agree);
 - abide by the Tri-Council Conflict of Interest policy without losing many members during a particular year due to renewal of project grants;
 - achieve a better balance related to institutional, geographic, gender and other representation factors.