People. Discovery. Innovation.
Les gens. La découverte. L'innovation.

NSERC
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Natural Sciences and Engineering
Research Council of Canada

Conseil de recherches en sciences
naturelles et en génie du Canada

Canada

2017 Competition

Report from the SAPES Co-Chair to the Community

Presented by: Heather Logan, Carleton University

Congress of the Canadian Association of Physicists
May 29, 2017 – Kingston, ON

Natural Sciences and Engineering Research Council of Canada
Conseil de recherches en sciences naturelles et en génie du Canada
Canada

Outline

- Subatomic Physics Evaluation Section (SAPES)
- Pre-competition Activities
- Large Project Day and Competition Week
- Rounds 1, 2 and Revisits
- Competition Financial Report
- Evolution of Awards
- Discovery Accelerator Supplements
- Policy Matters
- Information for the 2018 Competition

Subatomic Physics Evaluation Section

2017 Competition

Name	Institution	Term	Expertise
Marielle Chartier	University of Liverpool	2016-2017	Experimental NP
Alfredo Galindo-Uribarri	Oak Ridge National Laboratory	2016-2019	Experimental NP
Karsten Heeger	Yale University	2015-2018	Experimental HEP, Astro.
Hans Kraus	University of Oxford	2016-2019	Experimental HEP
Heather Logan	Carleton University	2015-2018	Theoretical HEP
Naomi Makins	University of Illinois at Urbana-Champaign	2014-2017	Experimental IEP
Jeffery Martin	University of Winnipeg	2016-2019	Experimental IEP, Fundamental Symmetries
Gabriel Martinez Pinedo	Technische Universität Darmstadt	2015-2018	Theoretical NP
Tor Raubenheimer	Standford Linear Accelerator Center	2016-2019	Experimental HEP
Adam Ritz	University of Victoria	2014-2017	Theoretical HEP, Strings
Niki Saoulidou	University of Athens	2016-2019	Experimental HEP
Brigitte Vachon	McGill University	2016-2019	Experimental HEP

Alfredo Galindo-Uribarri and Naomi Makins participated remotely.

The Subatomic Physics Evaluation Section
Support to Operations

- Group Chair
  - Kari Dalnoki-Veress, McMaster University
  - 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; attended first day of SAP Competition week in 2017.

- NSERC Staff
  - Trevor Rodrigues; Program Assistant
  - Kim Bonnet / Caroline Bicker; Program Officers
  - Sarah Overington / Emily Diepenveen; Team Leaders
  - Elizabeth Boston; Director

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 (Project or Individual) 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 Co-Chairs select members to be 1st, 2nd and 3rd (where required) internal reviewers

Pre-Competition Activities

- Applicants submit full 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 2**: SAPES 2017 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 (Nov. 4-5, Toronto)
  - DEAP-3600 (Nov. 13-14, Ottawa)
  - EXO (Dec. 6-7, Ottawa)
  - Gamma Ray Spectroscopy @ ISAC (Dec. 9-10, Vancouver)
  - SNO+ (Nov. 11-12, Ottawa)
  - T2K (Dec. 12-13, Toronto)

Large Project Day

LPD 2017 was held February 26, 2017 in Ottawa:

- Participants receive SAPES questions in advance
- This year's LPD participants (by collaboration in alpha order):
  - ALPHA
  - ATLAS
  - DEAP-3600
  - EXO
  - Gamma-Ray Spectroscopy at ISAC
  - IceCube
  - SNO+
  - SuperCDMS
  - T2K
- *In camera* meetings with institutional representatives:

  CFI, **CINP**, **CPARC**, **IPP**, **Perimeter**, **SNOLAB**, and **TRIUMF**.

Competition Week

- Competition week: **February 27 – March 3, 2017** in Ottawa
- Assessment of applications done in 2+ rounds
  - Round 1: determine Merit Criteria ratings & 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

    Re-visit of SAPPJs to ensure consistency in recommended support, based on ratings of Merit Criteria from Round 1.
- 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

- 51 applications
- Total requested: $15.925M
- Available funds: $9.141M
- Projected average funding rate was 57%

Compare to:

2008	2009	2010	2011	2012	2013	2014	2015	2016
66%	66%	*57%	61%	69%	53%	52%	64%	**55%

* Without SNOLAB operations

** Includes increase from *Budget 2016*

Competition Budget

SUBATOMIC PHYSICS ENVELOPE
MULTI-YEAR COMMITMENTS BY CATEGORY
Beginning of 2017 Competition

	2016	2017	2018	2019	2020
RTI - COMMITTED	$85,000	$35,000	$0	$0	$0
RTI - 2016 Competition	$479,875	$0	$0	$0	$0
RTI - TOTAL	**$564,875**	**$35,000**	**$0**	**$0**	**$0**
THEORY - COMMITTED	$2,692,800	$2,081,300	$1,520,100	$949,100	$38,000
THEORY - 2016 Competition	$693,000	$703,000	$703,000	$618,000	$618,000
THEORY - TOTAL	**$3,385,800**	**$2,784,300**	**$2,223,100**	**$1,567,100**	**$656,000**
EXP OPS** - COMMITTED	$12,570,370	$7,854,420	$261,370	$144,957	$0
EXP OPS - 2016 Competition	$5,368,400	$2,780,200	$2,638,600	$388,000	$388,000
EXP OPS - TOTAL	**$17,938,770**	**$10,634,620**	**$2,899,970**	**$532,957**	**$388,000**
MRS - COMMITTED	$539,000	$484,173	$46,000	$48,000	$0
MRS - 2016 Competition	$1,741,000	$1,741,000	$1,411,000	$0	$0
MRS - TOTAL	**$2,280,000**	**$2,225,173**	**$1,457,000**	**$48,000**	**$0**
TOTAL - COMMITTED	$15,887,170	$10,454,893	$1,827,470	$1,142,057	$38,000
TOTAL - 2016 Competition	$8,282,275	$5,224,200	$4,752,600	$1,006,000	$1,006,000
GRAND TOTAL	**$24,169,445**	**$15,679,093**	**$6,580,070**	**$2,148,057**	**$1,044,000**
TOTAL ENVELOPE	**$24,169,445**	**$24,820,511**	**$24,833,911**	**$25,036,331**	**$25,407,251**
AVAILABLE	**$0**	**$9,141,418**	**$18,253,841**	**$22,888,274**	**$24,363,251**

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

Any member or NSERC staff may “flag” an application.

Members are asked not to tally results to avoid biases.

Round 1

- Full Section deliberations
  - Experimental Individual 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: $9.269M*
- Requested: $15.925M
- Recommended in Round 1: $10.621M
- Balance: - $1.352M

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

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

End of Round 2

- Available Funds: $9.269M*
- Requested: $15.925M
- Recommended in Round 2: $9.257M
- Balance: + $12k

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

- Quota of one (1) Discovery Accelerator Supplement (DAS) for the SAPES in 2017.

Multiyear Commitments at End of Competition

SUBATOMIC PHYSICS ENVELOPE
MULTI-YEAR COMMITMENTS BY CATEGORY
End of Round 2

	2017	2018	2019	2020	2021
RTI - COMMITTED	$35,000	$0	$0	$0	
RTI - 2017 Competition	$390,003	$0	$0	$0	$0
RTI - TOTAL	**$425,003**	**$0**	**$0**	**$0**	**$0**
THEORY - COMMITTED	$2,784,300	$2,223,100	$1,567,100	$656,000	
THEORY - 2017 Competition	$636,000	$590,000	$600,000	$480,000	$480,000
THEORY - TOTAL	**$3,420,300**	**$2,813,100**	**$2,167,100**	**$1,136,000**	**$480,000**
EXP OPS** - COMMITTED	$10,634,620	$2,899,970	$532,957	$388,000	
EXP OPS - 2017 Competition	$8,012,500	$8,052,500	$3,521,000	$1,867,000	$1,867,000
EXP OPS - TOTAL	**$18,647,120**	**$10,952,470**	**$4,053,957**	**$2,255,000**	**$1,867,000**
MRS - COMMITTED	$2,161,000	$1,457,000	$48,000	$0	$0
MRS - 2017 Competition	$219,000	$216,000	$217,500	$0	$0
MRS - TOTAL	**$2,380,000**	**$1,673,000**	**$265,500**	**$0**	**$0**
TOTAL - COMMITTED	$15,614,920	$6,580,070	$2,148,057	$1,044,000	$0
TOTAL - 2017 Competition	$9,257,503	$8,858,500	$4,338,500	$2,347,000	$2,347,000
GRAND TOTAL	**$24,872,423**	**$15,438,570**	**$6,486,557**	**$3,391,000**	**$2,347,000**
TOTAL ENVELOPE	**$24,884,684**	**$24,833,911**	**$25,036,331**	**$25,407,251**	**$25,407,251**
AVAILABLE	**$12,261**	**$9,395,341**	**$18,549,774**	**$22,016,251**	**$23,060,251**

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

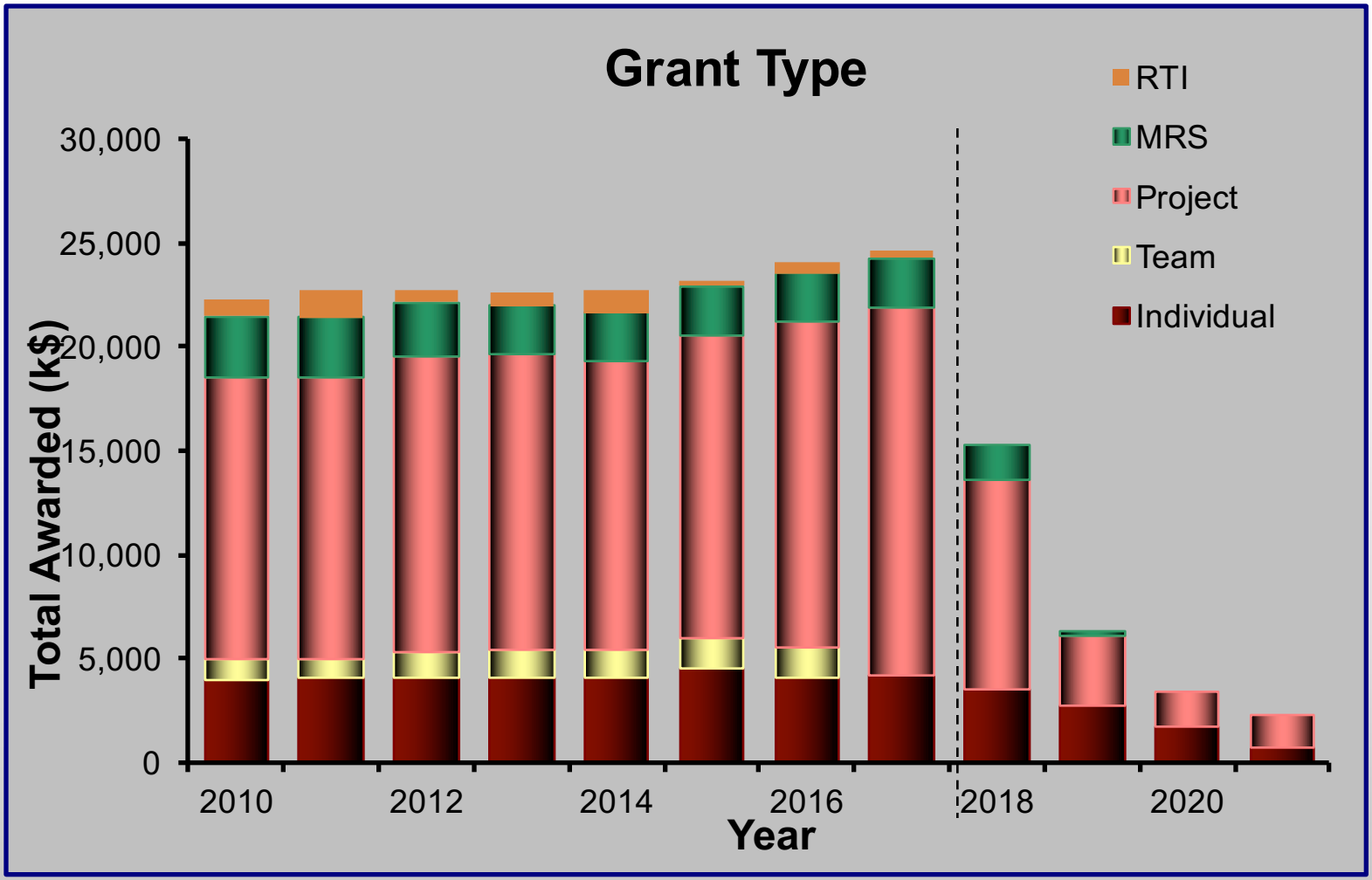
Share of Envelope at End of Competition

Comparison to Past Years

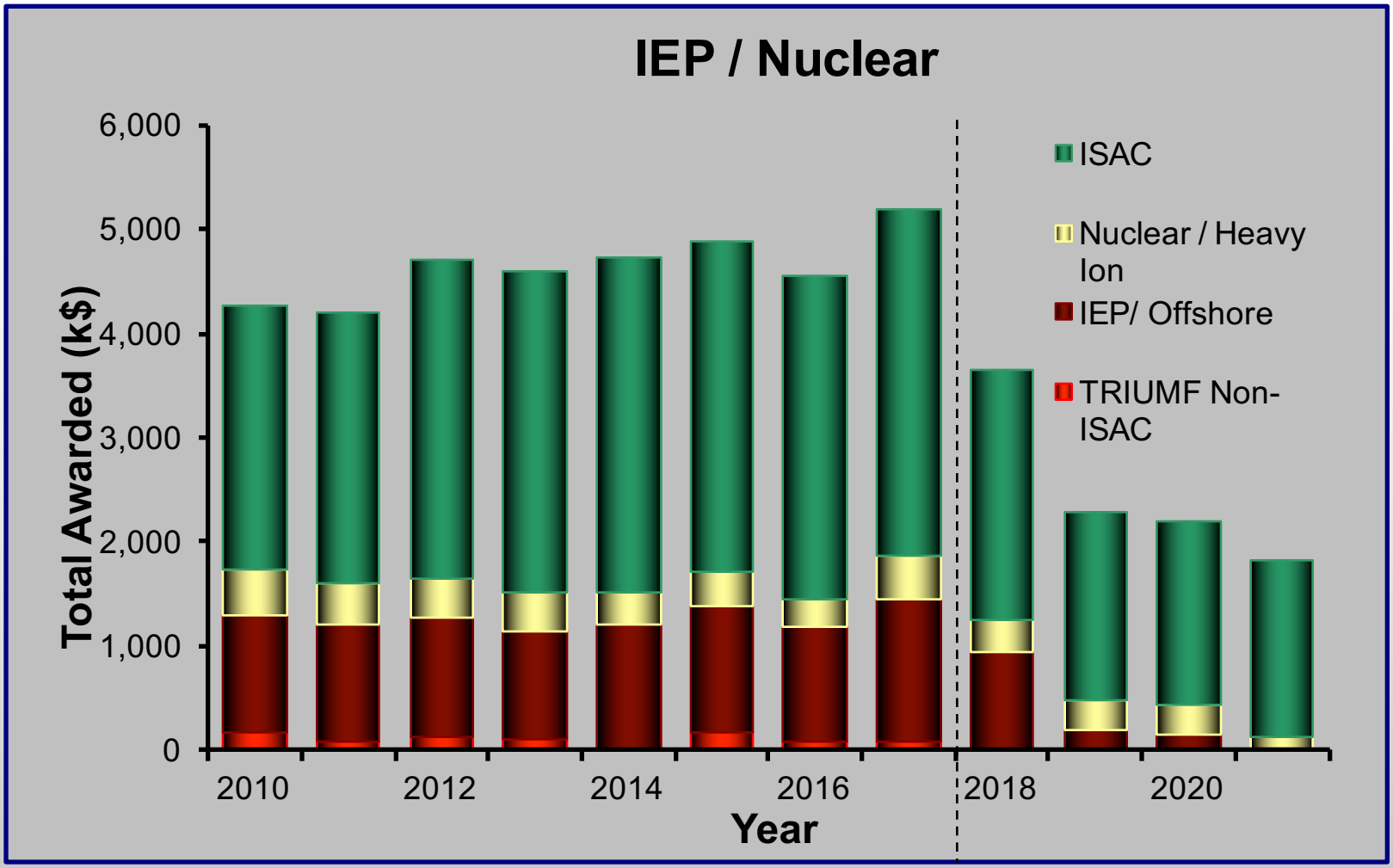
Subatomic Physics Evaluation Section Evolution of Envelope's Shares								
	2017	**2016**	**2015**	**2014**	**2013**	**2012**	**2011**	**2010**
Theory	13.8%	14.0%	14.9%	14.0%	14.3%	14.2%	14.2%	14.2%
RTI	1.7%	2.3%	1.2%	4.7%	2.7%	2.6%	5.5%	3.8%
Total Research Ops	84.5%	83.7%	83.8%	81.4%	82.9%	83.3%	80.3%	82.0%
Exp. Ops	**75.0%**	**74.2%**	73.5%	71.3%	72.8%	71.9%	67.7%	68.9%
MRS	**9.6%**	**9.4%**	10.3%	10.1%	10.2%	11.3%	12.5%	13.0%

Takes into account the Federal Budget 2016 increases.

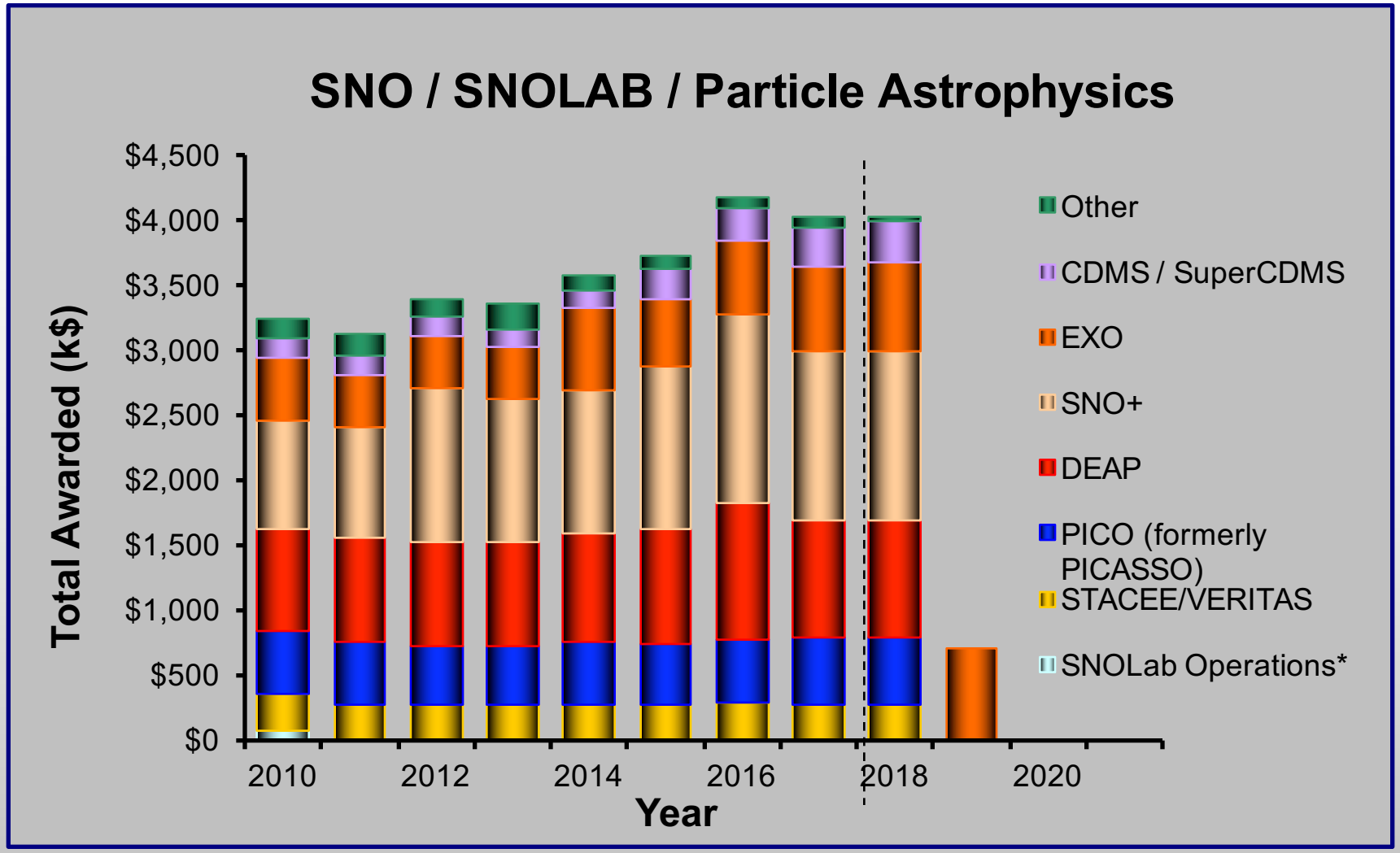
Evolution of SAPES Awards



Evolution of SAPES Awards



Evolution of SAPES Awards



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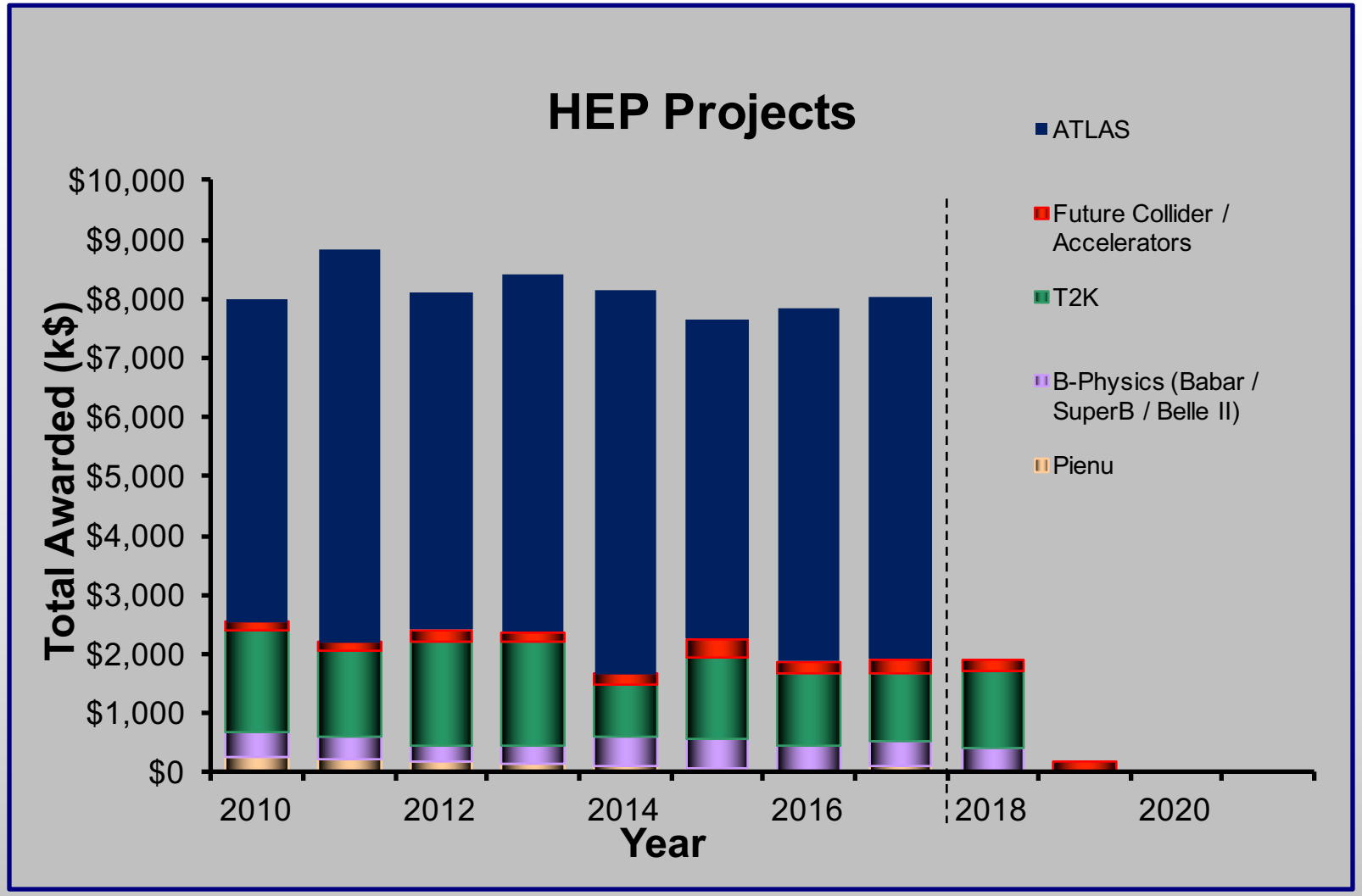

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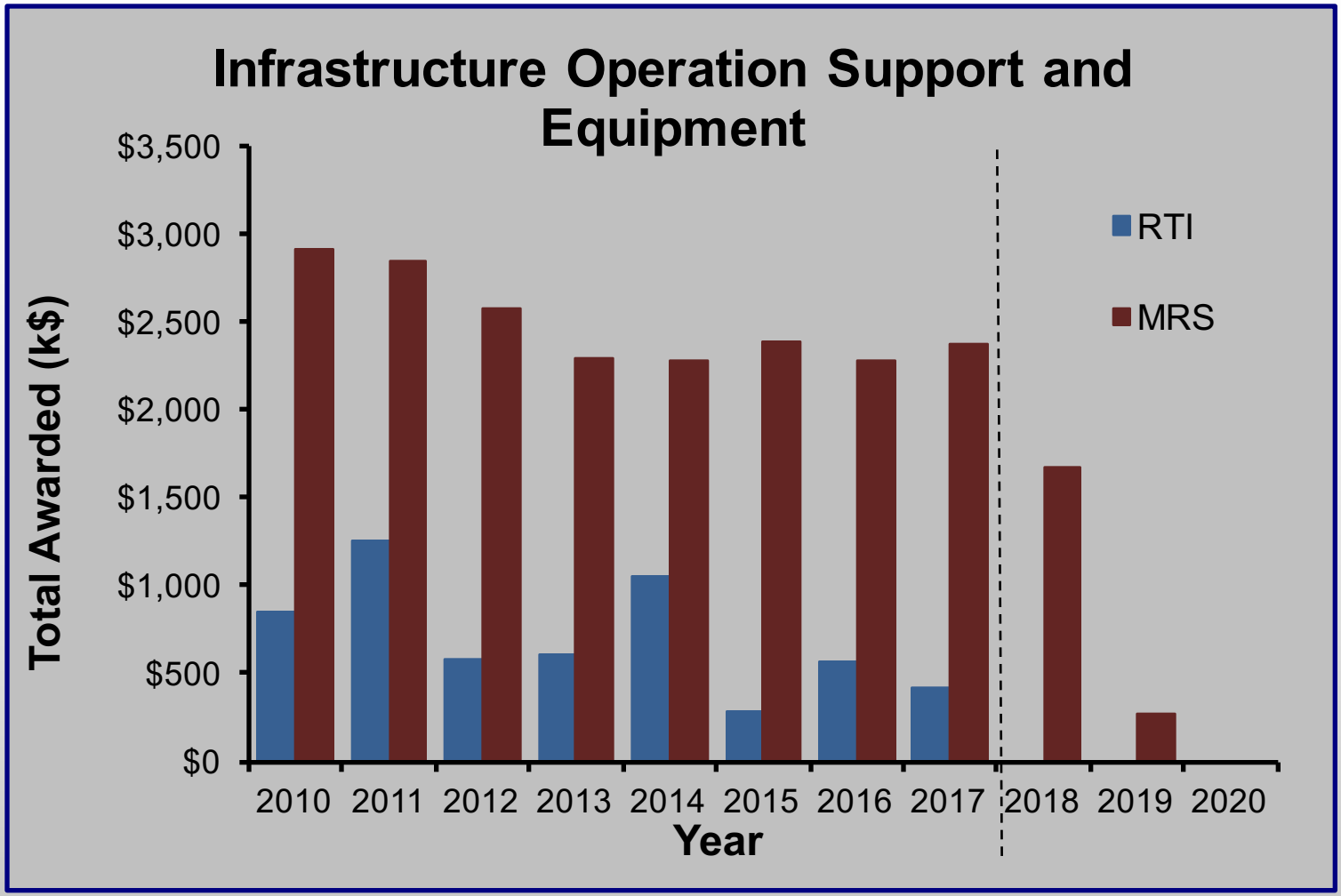

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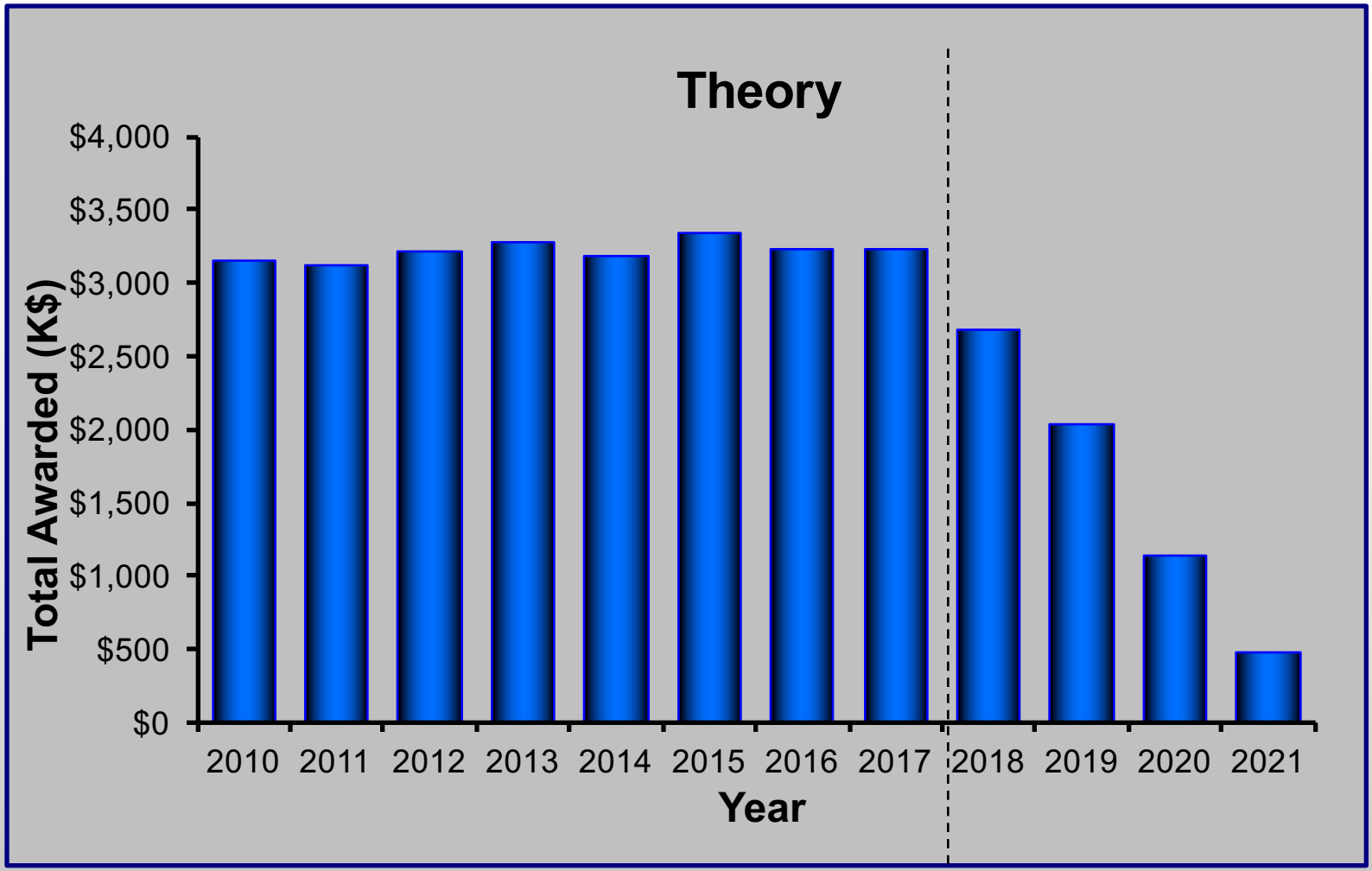
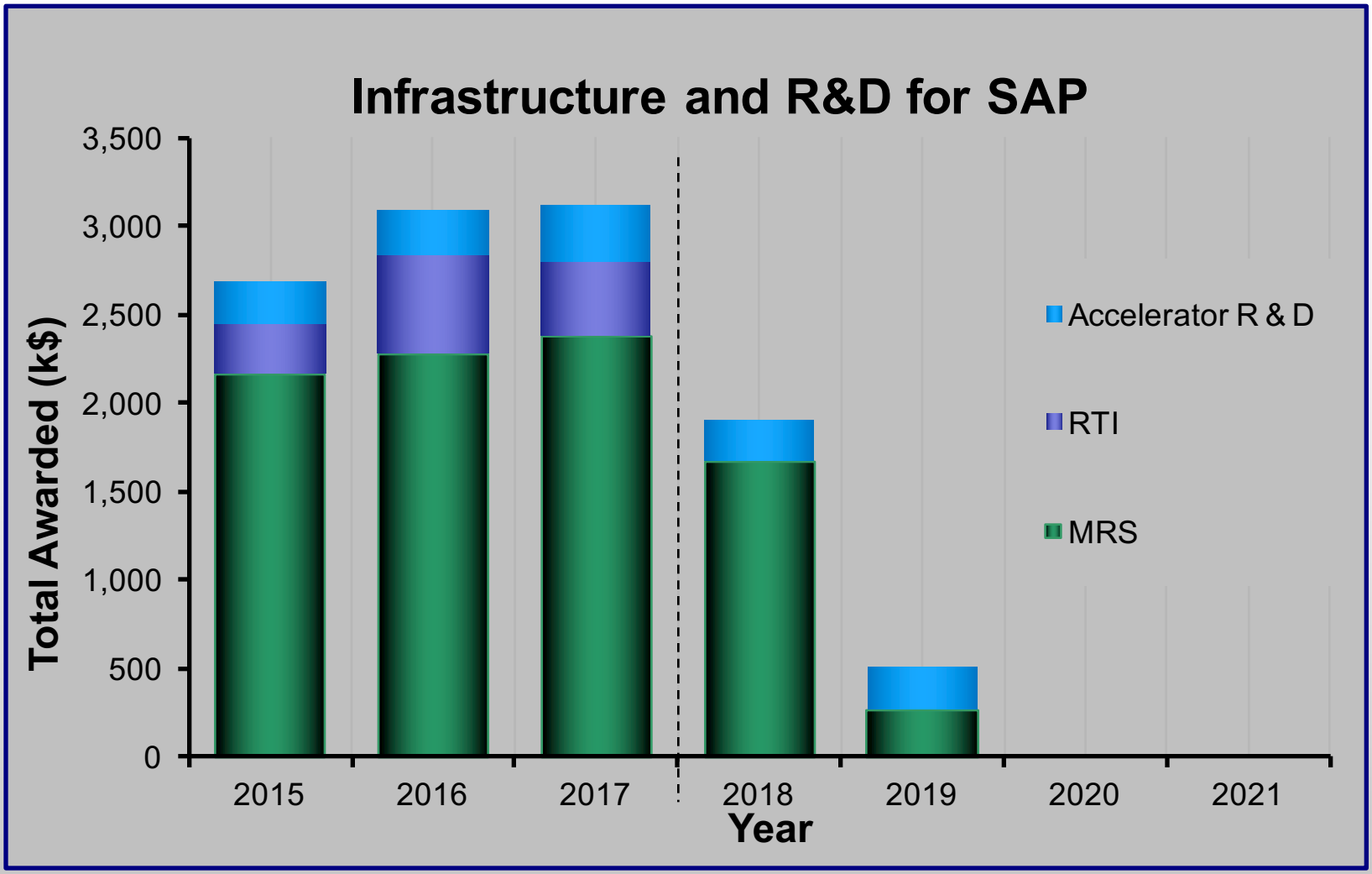


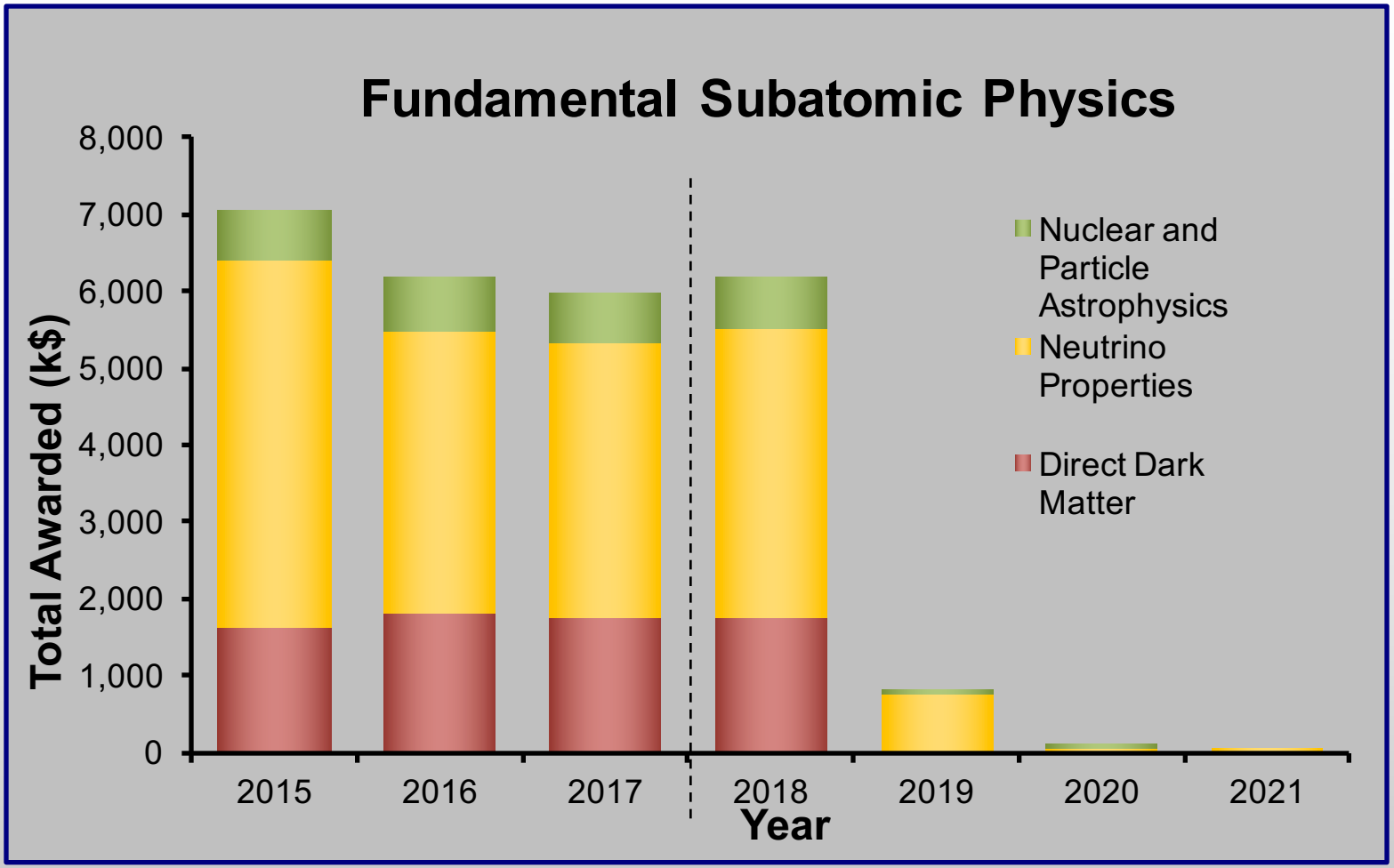
LRP 2016 Categories

- Accelerator R&D
- Direct Dark Matter
- Energy Frontier
- MRS
- Neutrino Properties
- Nuclear and Particle Astrophysics
- Precision Frontier
- RTI
- Strongly Interacting Matter
- Theory

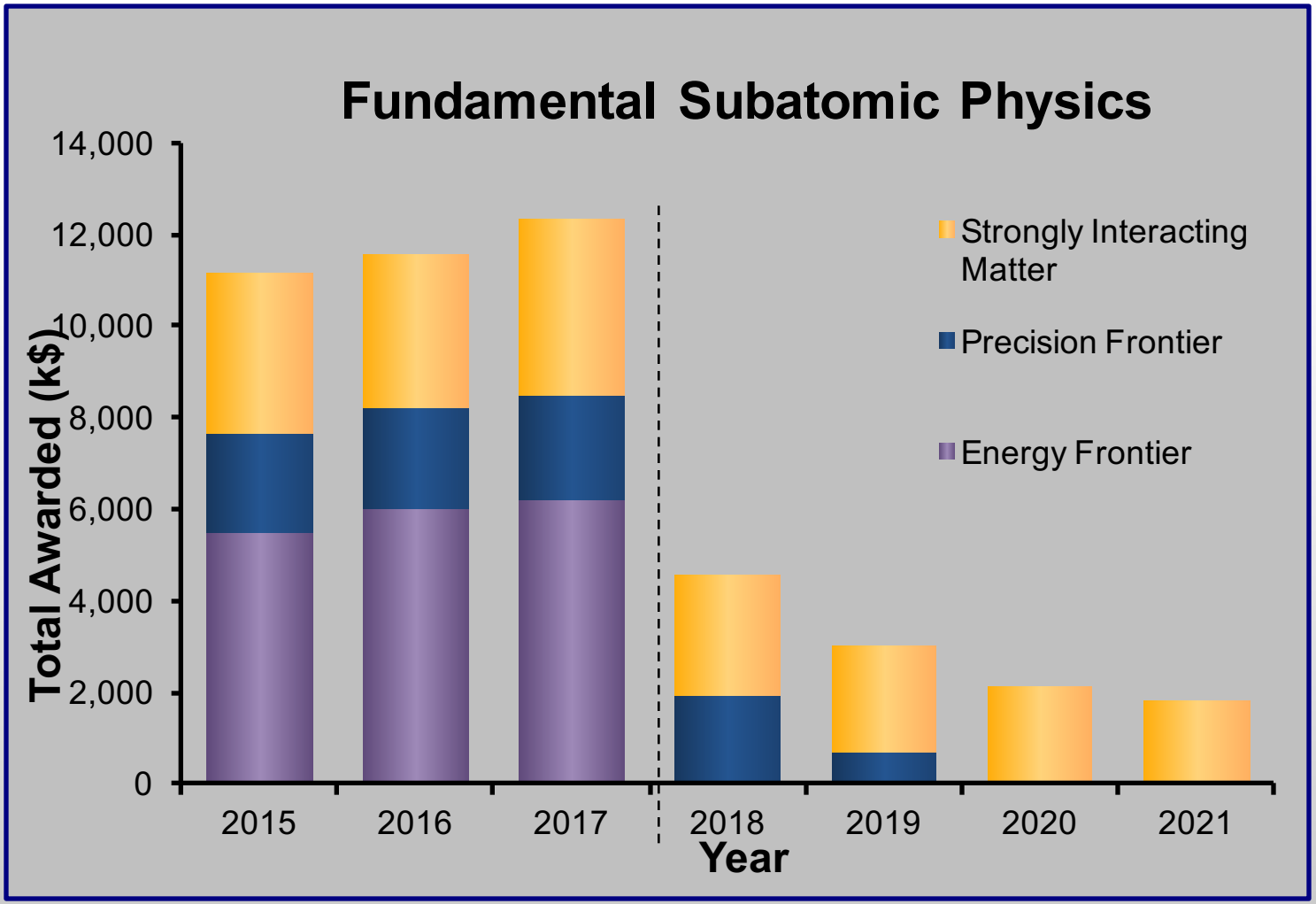
Evolution of SAPES Awards



Evolution of SAPES Awards



Evolution of SAPES Awards



Policy Matters

- Mario Pinto, Pierre Charest and Elizabeth Boston attended this session in part or in whole.
- Recommendations to NSERC included:
  - Time Devoted to Research – Members suggested the application material contain a table with all co-applicants and the **number of hours devoted to the research proposed** within the budget justification; this should also be expressed as a **percentage of total time** committed through all projects.
  - SAPES recommended that more detailed instructions, and possibly **a template**, be provided to large Project applicants when asking for reduced budget scenarios, in an effort to obtain a consistent level of detail from all applicants.
  - SAPES recommended presentation of terms of reference in advance of Expert Reviews to ensure committees have a clear understanding of the **budget pressure** faced by the SAP envelope, as well as a **detailed funding recommendation** (template).
  - SAPES discussed the possibility of having ***in camera* presentations by applicants** at Large Project Day
  - Continue pursuing **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 2016 between SAPES Chair, NSERC and CFI to discuss issues raised through the 2017 LRP process;
  - SAPES Co-Chair & NSERC Team Leader participated as *ex officio* members during part 1 of CFI's Expert Review Committee in December 2016;
  - CFI provided reference data to NSERC on request, specifically a list of all SAP-related CFI applications under review;
  - CFI representatives participated in LPD 2017 as presenter and then as observer throughout afternoon.

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 Federal 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 are being phased into the Discovery grants program over the five-year cycle;
- the increases to the SAP envelope being $772k, $1,152k, $1,132k, $1,503k and $1,874k in FY2016-2020 respectively.

Passing the baton to …

Jeffery Martin

University of Winnipeg

Niki Saoulidou

University of Athens

Co-Chairs of the SAPES for 2017-18

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 selects 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 alternate) 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 2, 2016 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 Math & Stats EG
    - **Four** applications which were submitted to Physics EG in error were transferred to SAPES
    - For **three** applications, SAPES received expert input from members of the Physics EG and Math & Stats EG with relevant expertise
    - Members of SAPES participated in the review of **one** Discovery grant applications in the Math & Stats 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 2017.

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.

Changes to SAP Programs

Effective for the 2017 Discovery Grants competition, NSERC **no longer accepts** 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 continue to receive support until their last installment.