Subatomic Physics Evaluation Section
Annual Report

Randy Lewis, Chair
York University
April 2012

I. Introduction

This report summarizes the activities of the Subatomic Physics (SAP) Evaluation Section (SAPES) in fiscal year 2011-12, including the results of the February 2012 competition. The report is provided for information to the NSERC Committee on Grants and Scholarships, and to the Canadian subatomic physics community. The format and content of the report follow the reports from previous years very closely.

SAPES is unique among NSERC Evaluation Sections since it operates within an annual budget envelope. Individual, Team and Project Discovery, Research Tools and Instruments (RTI), and Major Resources Support (MRS) grant applications in subatomic physics are evaluated together by SAPES. This comprehensive approach is essential given the complexity and inter-dependency of many proposals, which are often and ever-more frequently parts of international programs and collaborations, and involve many universities and national laboratories. This approach is also essential for planning and stability of execution of large-scale and long-term projects, and for maintaining a balance between large projects and the smaller research efforts that are essential to the breadth and future success of the Canadian SAP program. The envelope structure also helps SAPES to attempt to maintain an appropriate balance between operations and capital investments. Moreover, the SAP community's five-year Long-Range Plan includes the community's priorities, and provides guidance to SAPES' deliberations. The most recent Long-Range Plan was produced in 2011.

Another unique strength of SAPES is the extent to which it solicits reviews by international experts of the highest calibre. All major Team, Project, RTI and MRS grants are separately reviewed by *ad hoc* or standing committees of internationally-recognized experts drawn from institutions from around the world. These committees perform exhaustive scientific, technical, and budgetary evaluations, and produce detailed written reports which provide exceptionally valuable input to SAPES for its assessment of the grant applications. Moreover, SAPES generally selects a substantial proportion of international external referees for each proposal, from the smallest individual discovery grant to the largest project proposal. Finally, the membership of SAPES is itself substantially international, with half or more of its members generally coming from institutions in the U.S. and Europe. This level of international review provides an exceptionally high degree of scrutiny and validation of the research funded by this Evaluation Section.

Despite the internationally-recognized excellence of Canadian SAP research, and the unique strengths of the SAPES envelope structure and review processes, the past several years have been increasingly difficult for this Evaluation Section to financially support the community's short- and long-term objectives at an appropriate and competitive level to ensure the maximum scientific return on substantial investments already made. Specifically, the SAPES budget has been practically flat for the past five years, while the number of full-time faculty has increased by about 10% over the same time and several high-priority research programs are in the ramping-up phase of their activities.

The scenario of a flat envelope was thoroughly analyzed in the 2006 LRP report, with the conclusion that it would lead to a curtailing of research operating support and affect growth possibilities in Canadian SAP research activities. In such a scenario, it was recognized that the ability of the Canadian subatomic physics community to exploit the major capital investments of the past decade and to achieve its long-term scientific vision would be jeopardized. We now look back on that 5-year period, during which the flat envelope was a sustained reality. Year after year, the SAPES worked diligently to optimize the use of the available funding despite the challenging situation. The 2011 LRP report, *The Subatomic Universe: Canada in the Age of Discovery*, describes an average funding increase of only 6.5% for the "flagship research programs" over the past 5 years as their ramp-ups continued, with concurrent reductions from elsewhere in the envelope. Of course those are averaged statements: there are excellent justifications for new and enhanced funding in a wide array of proposals, and the SAPES evaluates each one according to its merits. The 2012 competition was essentially one more step along this increasingly difficult path.

There is an urgent need to protect and exploit the considerable investments that have already been made in SAP research. One can justifiably state that the Canadian SAP program has become a victim of its own excellence and successes, and that the currently available operating funds are barely enough to maintain existing activities at a constrained level that is not always sufficient to allow Canadian researchers to contribute to the full extent of their potential. Clearly, the internationally-recognized excellence and contributions of the Canadian SAP community, coupled with the unique strengths of the SAPES envelope, ensure that additional investments in this area will yield exceptionally high returns in cutting-edge knowledge and the training of highly-qualified personnel (HQP). As stated in the 2011 LRP report, such additional investments are now more needed than ever.

II. Update on the Envelope

The pressure on the Section's funding envelope has been building for the last several years; it has now reached a level that is difficult to manage. In particular, substantial investments by federal and provincial government funding agencies have annually injected funds into the SAP program in excess of 50% of the entire SAPES envelope, including substantial capital investments from CFI and various agencies of the Ontario government (but excluding NRC funding of TRIUMF). Other substantial investments by

the Canadian government in science and technology, such as the Canada Research Chairs (CRC) program, have also resulted in a fast growth of the number and the quality of young faculty in SAP at many Canadian institutions. The latter increase has, in turn, been accompanied by a substantial growth in the number and quality of graduate students and other highly qualified personnel.

Such renewal and expansion are very welcome, and demonstrate the excellence and vitality of the Canadian subatomic physics community. They pose, however, exceedingly difficult funding challenges in a fixed budget scenario for the envelope. Since the 2006 Long-Range Plan was released, new funds were allocated to NSERC by the federal government in the annual budgets, but were mostly provided for clearly targeted priority areas which did not include SAP. In *Budget 2011*, NSERC received $15M to "support outstanding research in the natural sciences and engineering fields, such as the Strategy for Partnerships and Innovation (SPI)." NSERC has devoted half of these funds to enhance the support given to early career researchers (ECRs) across all disciplines in the form of supplements to their Discovery grants. ECRs were identified through consultations as the group that would most benefit from additional resources. ECRs with active grants in subatomic physics have received such supplements; this includes Project grants in which ECRs are co-applicants. Even though this is a welcome development, it has translated into a limited influx of funds into the envelope.

NSERC has announced in April 2012 that some programs outside the envelope would be affected as a result of its contributions to the Government of Canada's efforts to balance its budgets. NSERC has recognized the particular organizational and operational requirements of the subatomic physics community, as well as the strong endorsement of the community to the envelope mechanism, which was reiterated in the 2011 LRP report. The announced changes do not affect the Subatomic Physics envelope's suite of programs.

III. Evaluation Section

This year's SAPES comprised 12 members, including three theorists. Three new members joined this year; they were Priscilla Cushman (University of Minnesota), Dugan O'Neil (Simon Fraser University), and Erich Poppitz (University of Toronto). Carl Svensson returned after a one-year absence. The full SAPES membership is given below.

Name	Organization	Final Year
Philip Burrows	Oxford University	(2013)
Priscilla Cushman	University of Minnesota	(2014)
Bonnie Fleming	Yale University	(2013)
Gilles Gerbier	Commissariat à l'énergie atomique - Saclay	(2012)
Gerald Gwinner	University of Manitoba	(2013)
Mark Huyse	Katholieke Universiteit Leuven	(2013)
Randy Lewis (*Chair*)	York University	(2012)

Dugan O'Neil	Simon Fraser University	(2014)
Thomas Papenbrock	University of Tennessee at Knoxville	(2012)
Erich Poppitz	University of Toronto	(2014)
Paul Reimer	Argonne National Laboratory	(2013)
Carl Svensson	University of Guelph	(2013)

The Chair would like to acknowledge the very demanding task faced by SAPES members throughout the year, up to and especially through competition week. Very long hours of deliberations ensured that each proposal was fairly and consistently evaluated according to the selection criteria. The remarkable professionalism and dedication of SAPES members is manifest in the high quality of the Section's recommendations. The Chair also wishes to sincerely thank SAPES members for their careful and constructive attitude throughout the competition, and for ensuring the conduct of our many discussions in a pleasant atmosphere indeed. Special thanks go to this year's retiring members, Gilles Gerbier and Thomas Papenbrock, for three years of outstanding service to the Canadian SAP community; it is deeply appreciated.

It is a pleasure for the Chair to thank NSERC staff and the Physics Group Chair for their expert guidance and help in the months leading up to the competition, and during the many long days of competition week: James Murphy and Kim Bonnet (Program Officers), Samir Boughaba (Team Leader), Bruce Gaulin (McMaster University - NSERC Group Chair for Physics), and Isabelle Blain (Vice-President, Research Grants & Scholarships). Finally, the Chair wishes to express his highest regards and warmest appreciation to Samir for his extraordinary professionalism, patience, commitment and expert counsel throughout the 2011-12 competition year.

IV. Orientation/Policy Meeting and Information Visits

Each year, SAPES launches its operations at a one-day orientation and policy meeting. This is a critical opportunity for the new members to familiarize themselves with NSERC and SAPES operating procedures, to be informed of the process leading to competition week, and to interact with the returning members. News from NSERC, including a detailed review of the competition budget, is also communicated to the members. The orientation and policy meeting for this competition was held at York University on Monday October 17, 2011. This was a full working day of presentations by the Chair and NSERC staff, and discussions amongst Section members. Attending in person were all new members, returning members from institutions within Ontario, and NSERC staff. Due to operating budget pressures at NSERC, returning members from institutions outside Ontario attended by teleconference.

Until the 2011 competition, it had been a tradition, following the policy meeting, for SAPES to visit Canadian institutions with subatomic physics research programs on a 3-year rotation basis. The visits were conducted for informational purposes only and were not a part of the grant evaluation process. They provided opportunities to communicate

information about NSERC and the review process to researchers, while the Section members heard presentations about the researchers' activities and learned first-hand about their infrastructure and environment. The learning process that accompanied these visits was particularly important considering the large number of SAPES members affiliated with non-Canadian research institutions, in addition to the variety of sub-disciplines covered by the envelope. These visits were also a valuable opportunity for Canadian members to get a full sense of the research environments of their colleagues from one end of the country to the other over their three years of service on SAPES.

During the 2011 competition and again for the 2012 competition, owing to operating budget pressures at NSERC, these information visits did not take place. This is viewed by members of SAPES, and indeed much of the SAP community, as a negative development, as is the mandatory participation by teleconference of returning members in the orientation and policy meeting. The benefits to the review process that leads to multimillion funding recommendations completely justify the relatively modest costs involved. The Section appreciates the budgetary constraints under which NSERC is operating. The Section strongly recommends, however, that NSERC considers reinstating these visits.

V. Pre-Review Process

The review of the Notifications of Intent to Apply for a Discovery Grant (Form 180), took place in September. Discovery grants include Individual, Team, and Project grants. The review involved all the Section Chairs of the Physics Evaluation Group, including the SAPES Chair, and the Group Chair. Its objective was to discuss those applications whose research topics crossed the boundaries of two or more Sections within the Physics Evaluation Group or related to a discipline other than physics. For each application, the intent was to identify the Section (or Evaluation Group, if the research topic related to another discipline) that should take the lead for the review and determine the need to provide or receive expert input to/from other Evaluation Groups. In the case of SAPES, which operates in a standalone mode with a separate membership, the need to provide or receive expert input was related to the other Sections of the Physics Evaluation Group.

As a result of this process, one application reviewed by SAPES in the past was transferred out to a Section of the Physics Evaluation Group. Four individual grant applications were retained within SAPES with the provision that members from the Physics Evaluation Group, with relevant expertise, would participate in the deliberations during competition week. Likewise, members of SAPES participated in the review of four Individual Discovery grant applications in other Sections of the Physics Evaluation Group.

Furthermore, when the notifications of intent to apply (Form 180 for Discovery Grants and Form 181 for MRS) are received, each application is assigned by the Chair to first and second internal reviewers, who are SAPES members with the most appropriate

expertise, and with careful consideration of balancing the full workload among all of the members. Additionally, a third reviewer is systematically assigned, with special responsibility for budget scrutiny, for applications that request funds averaging $500k/year or more.

In the case of Discovery grant applications, the first reviewer is required to recommend five external referees for each of his/her assigned proposals. Typically, up to two of the external referees could be chosen from the list of suggested referees on the Form 180. It is in the applicant's interest to suggest referees who are not in conflict of interest according to NSERC's guidelines. Internal reviewers generally recommend a substantial fraction of external referees who are from outside Canada. This year, an average of 3.4 external referee reports per application were received.

Similarly, once RTI grant applications are received, the Chair assigns first and second internal reviewers to each of them; a third internal reviewer is systematically assigned to Category-3 grant applications. External referee reports are not typically sought for Category-1 and Category-2 RTI grant applications.

VI. *Ad hoc* Expert Review Committees

Ad hoc expert reviewes are typically held for Discovery grant applications requesting more than an average of $1M per year or for Category-3 RTI grant applications. In this year's competition, four *ad hoc* expert reviews were conducted prior to the competition, in the fall of 2011, and the SAPES Chair was present as an observer for each of them. These reviews related to the project grant applications submitted by ATLAS-Canada, DEAP-3600, and SNO+, as well as the Team grant application for Gamma-Ray Spectroscopy at ISAC. The ATLAS-Canada review was held at TRIUMF on November 5-6, 2011, the DEAP-3600 review was held at the Ottawa Marriott Hotel on December 2-3, 2011, the SNO+ review was held at the Ottawa Marriott Hotel on December 4-5, 2011, and the Gamma-Ray Spectroscopy at ISAC review was held by teleconference on November 30 and December 12, 2011.

The reviews were carried out by *ad hoc* or standing Committees of experts. Full reports with recommendations, including budget recommendations when applicable, were prepared for SAPES. The reports, without the budget recommendations, were sent by NSERC to the Project/Team Collaborations prior to Large Project Day. The reports *with* the budget recommendations are sent to the Project/Team Collaborations after the results of the competition are announced.

The Chair also attended the meeting of the Advisory Committee on TRIUMF (ACOT) held on December 9-10, 2011. He will be attending the ACOT meeting on May 7-8, 2012 as well.

VII. Large Project Day

It has proved extremely useful to devote one day prior to the beginning of the competition to presentations by applicants of Discovery and MRS grant applications typically requesting an average of $500k per year or more, besides applicants of Category-2 or Category-3 RTI grant proposals. This is referred to as Large Project Day (LPD). It is also now customary to meet on LPD with management representatives from the Canadian Institute of Nuclear Physics (CINP), the Institute of Particle Physics (IPP), the Perimeter Institute, SNOLAB, and TRIUMF. LPD was held this year in Ottawa on Sunday, February 12, 2012. The agenda is attached as Appendix 1.

The day began with *in camera* presentations by William Trischuk (Director of the IPP), Kumar Sharma and Paul Garrett (President and Treasurer, respectively, of the Board of Directors of the CINP), Reiner Kruecken (Associate Director of TRIUMF), Nigel Smith (Director of SNOLAB), and Cliff Burgess (representing the Director of the Perimeter Institute). They provided the Section with the perspective of the communities served by their organizations. Project/Team applicants then made presentations and answered questions previously submitted by the Evaluation Section; this was done in an open session that was attended by about two dozen members of the community. The invited projects were, in order of presentation, ATLAS, Gamma-Ray Spectroscopy at ISAC, DEAP-3600, SNO+, and PICASSO.

Following these public presentations, the Evaluation Section met *in camera* with Malcolm Butler, Chair of the Long-Range Planning Committee (LRPC) who provided an overview of the recently-completed LRP. There was no discussion of specific projects and their intrinsic merits, which could have prejudiced the deliberations during competition week.

The day finished with an *in camera* meeting with Isabelle Blain (Vice-President, Research Grants & Scholarships).

VIII. Beginning of the Competition

The funds available to the Section at the beginning of the competition are shown in Table 1.

An amount of $150k was subtracted from the envelope for fiscal year 2012-13 as the third reimbursement installment of a four-year forward borrowing commitment from the 2009 competition. There was a carry-forward of $249k from last year's competition into this year's budget, mostly due to various payment adjustments and deferrals.

2012 Competition - Subatomic Physics Envelope Budget Beginning of Competition							
(millions of dollars)							
Budget Item	**2009-10**	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**2015-16**
Base Budget[1]	20.729	20.729	20.729	20.729	20.729	20.729	20.729
Cumulative Permanent Transfers:							
New Applicants / Early Career Researchers[2]	1.622	1.622	1.682	1.682	1.682	1.682	1.682
Reallocations[3]	0.459	0.459	0.459	0.459	0.459	0.459	0.459
Transfers due to population dynamics[4]		-0.183	-0.183	-0.223	-0.223	-0.223	-0.223
Temporary Transfers:							
ATLAS Cost-to-Completion	-0.300	-0.300	0.000	0.000	0.000	0.000	0.000
Forward-Borrow	0.600	-0.150	-0.150	-0.150	-0.150	0.000	0.000
Total Fiscal Year	23.239	22.410	$22.687	$22.497	$22.497	$22.647	$22.647
Actual Spending	23.006	22.047	22.749				
Carry-forward[5]	0.233	0.363	0.249				
Commitments				-10.312	-5.418	-1.839	-1.015
RTI budget adjustment[6]	0.027	-	-	-			
Available for Competition				**12.433**			

[1] *Includes any past transfers from other programs.*

[2] *Following Budget 2011, a supplement of $5,000 was provided towards the support of each Early Career Researcher (active grant) starting from FY2011. This resulted in an increase of $60,000 to the envelope.*

[3] *FY 2007/08 was the last year for the 2002 reallocations exercise.*

[4] *Net total of grants held by returning applicants whose new applications are transferred in/out from SAP Evaluation Section.*

[5] *For each year, the carry forward is calculated by subtracting the actual spending from the total fiscal year allotment, then adding the previous year's carry-forward amount.*

[6] *Since 2009, there has been no RTI adjustment.*

Table 1. Overall budget available at the beginning of the 2012 competition.

Taking into account on-going commitments from previous competitions, $12.433M was available for the 2012 competition (55% of the fiscal year budget). This year, SAPES received 60 applications. At the start of competition, the total funds requested for fiscal year 2012 amounted to $18.096M. Consequently, at that point in the competition, the projected average funding rate for fiscal year 2012 was 69%. For comparison, the funding rates for the years 2007 to 2011 were 55%, 66%, 66%, 46% (57% without SNOLAB operations), and 61% respectively.

IX. The 2012 Competition

The competition was held in Ottawa over a period of five days, from Monday, February 13 to Friday, February 17, 2012. The first day started with a review of logistics, policies, and procedures, and a presentation of the budget as outlined in the previous section. The Evaluation Section then started Round 1 of the competition, and proceeded with the review of the applications.

The format of the discussions strictly followed NSERC's guidelines and SAPES internal procedures. Previously, in the fall of 2011, at least two SAPES members were assigned to conduct an *internal* review of each application. During competition week, for each application, the first internal reviewer presented all aspects of the proposal and made her/his recommendations (ratings, funding, duration). This was followed by additional comments and/or a presentation by the second internal reviewer, who also made recommendations. For grants requesting in excess of $500k per year, a third presentation, concentrating on budget matters, was made. These in-depth assessments were carried out independently by the internal reviewers (who were not aware of the other's identity before the first reviewer's presentation), and took into account the reports received from external referees, if available, as well as reports from *ad hoc* expert committees where applicable. Each application was then thoroughly discussed by all SAPES members. At the end of the discussion, each member was asked to rate the application against NSERC's selection criteria: (i) excellence of the researcher(s), (ii) merit of the proposal, (iii) contributions to the training of Highly Qualified Personnel (HQP), and (iv) need for funds. SAPES then decided whether to recommend funding the application, the level of funding, and the funding duration. Any recommendation was determined through secret electronic voting. The median vote was selected as the final SAPES recommendation. Members in conflict with any particular application left the meeting room before the internal reviewers were identified and the application was discussed, and were never informed, even by the end of the competition, of the final result or of the identity of the internal reviewers.

Once the review of the experimental Individual, Team, and Project Discovery grant applications, as well as typically large RTI (Categories 2 and 3) and MRS (more than an average of $500k per year requested) proposals were completed, SAPES members were divided into two sub-Sections: theory and RTI/MRS. The theory sub-Section reviewed all the theory Individual grant applications. The RTI/MRS sub-Section reviewed the Category-1 RTI grant requests (up to $150k requested in total), as well as the MRS grant applications requesting an average of less than $500k per year.

As usual, it was strictly forbidden for SAPES members to keep a cumulative total of the recommended awards, in order not to bias the review of applications discussed towards the end, and to ensure that all applications were treated consistently and fairly. As a matter of fact, taking into account the members' conflicts of interest and the split into two sub-Sections, such budget tracking is practically impossible.

Moreover, in order to ensure the integrity of the review process, applications could be flagged by any SAPES member, the Group Chair, the Program Officer, or the Team Leader at any time in Round 1, if he/she felt that some aspects of the discussion or the recommendation necessitated further deliberations. Flagged applications are re-discussed before the budget balancing discussion that concludes the deliberations of Round 1.

The Round 1 deliberations concluded in the mid-afternoon on Wednesday, February 15. The Team Leader made a presentation on the budget, taking into account the sum of the recommended awards for all the applications. The result was that a sum of $13.873M had been recommended from the envelope, to be compared to a total of $12.433M that was available to SAPES, and $18.096M in requested funds.

Prior to the start of Round 2, a thorough discussion took place to establish the guiding principles for re-evaluation of all proposals in an attempt to balance the budget. The SAPES members were unanimous that the same set of principles would be applied to all proposals, that all proposals would again be assessed strictly on their merits, and that strict account would be taken of the Section's evaluations of the four criteria for each proposal, which had been recorded in Round 1. All applications were then re-assessed and revised funding recommendations made, again using secret electronic vote. As in Round 1, any application could be flagged if someone felt that some aspects of the re-assessment or the revised recommendation necessitated further deliberations.

The Round 2 deliberations concluded in the afternoon of Thursday, February 16. The Team Leader presented the results: the revised recommendation by the Section was for $13.099M from the envelope, compared again with the available sum of $12.433M. At that stage, the SAPES members unanimously agreed to a further round of deliberations (Round 3) following the same procedure as for Round 2.

The recommendations following Round 3 totalled $12.422M and the balance ($11k) was allocated as a carry-forward for the 2013 competition.

With a recommended total funding of $12.422M from the envelope and a total request for $18.096M, the funding rate for this year's competition is 69%.

X. End of Competition Results

The Section's final multiyear budget levels are shown in Table 2. Table 3 shows a multiyear breakdown of equipment, theory, experimental operating, and MRS allocations, while Table 4 gives the percentage share of the envelope in theory, equipment, and operations over the period from 2007 through 2012.

As forecast in the 2006 Long-Range Plan and confirmed in the 2011 Long-Range Plan, these figures provide quantitative measures of the funding crisis that has loomed over the SAP community for several years. The share of the envelope now committed to the support of research operations is at a record high of 83%, with little room for small-to-medium size capital investments for emerging endeavours.

In the recent past, the SAP community has shifted towards the CFI for major capital equipment. This additional source of funding is welcome, but it is important to highlight the fact that it is in turn generating further pressure on the envelope as the latter is the main funding source in support of research and operating costs. It is unfortunate that repeated attempts to foster the necessary level of coordination between CFI and NSERC have not yet succeeded. Moreover, the need for small-to-medium capital investments by SAPES, mostly for proposals that fall outside the mandate of the CFI, will likely increase again in the coming years. In particular, funds from SAPES will be needed for R&D efforts that are crucial for the future of Canadian SAP, and to satisfy the capital needs of the smaller programs that are essential to the breadth of the community.

XI. Recommendations to the DAS Program

This is the sixth year of the Discovery Accelerator Supplements (DAS) program, and the terms of reference changed somewhat for the 2012 competition. The present objective of this program is to provide substantial and timely resources to outstanding researchers who have a well-established research program, and who propose superior discovery research programs that explore high-risk transformational concepts and have the potential to capitalize on an opportunity. Contrary to the practice followed up to and including 2009, where GSC-19 (predecessor of SAPES) would put forward DAS candidates to be further reviewed by a multidisciplinary committee, SAPES now directly allocates one DAS award. During the regular deliberations for each Individual and Team Discovery grant application, SAPES members could put forward the applicant(s) after the deliberation and votes. All the potential candidates were then discussed in detail against the DAS selection criteria and objectives after Round 3. Subsequently, the members rated each candidate on a scale of 1 (excellent) to 5 (below average) through a secret vote, and one candidate was selected by numerical tally of the Section's votes.

The DAS program is not aimed at Project grant applications. As indicated in the 2009 annual report, a procedure is available for any member of a Collaboration submitting a Project grant application to be considered by SAPES for the DAS program.

2012 Competition - Subatomic Physics Envelope Budget End of Competition							
(millions of dollars)							
Budget Item	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**
Base Budget[1]	20.729	20.729	20.729	20.729	20.729	20.729	20.729
Cumulative Permanent Transfers:							
New Applicants / Early Career Researchers[2]	1.622	1.682	1.702	1.702	1.702	1.702	1.702
Reallocations[3]	0.459	0.459	0.459	0.459	0.459	0.459	0.459
Transfers due to population dynamics[4]	-0.183	-0.183	-0.223	-0.223	-0.223	-0.223	-0.223
Temporary Transfers:							
ATLAS Cost-to-Completion	-0.300	0.000	0.000	0.000	0.000	0.000	0.000
Forward-Borrow	-0.150	-0.150	-0.150	-0.150	0.000	0.000	0.000
Total Fiscal Year	22.410	$22.687	$22.517	$22.517	$22.667	$22.667	$22.667
Actual Spending	22.047	22.749	22.755				
Carry-forward[5]	0.363	0.249	0.011				
Commitments				-15.103	-11.108	-3.050	-2.057

[1] *Includes any past transfers from other programs.*

[2] *Following Budget 2011, a supplement of $5,000 was provided towards the support of each Early Career Researcher (active grant) starting from FY2011. Taking into account the 2012 competition results, the cumulative increase is $80,000.*

[3] *FY 2007/08 was the last year for the 2002 reallocations exercise.*

[4] *Net total of grants held by returning applicants whose new applications are transferred in/out from SAP Evaluation Section.*

[5] *For each year, the carry forward is calculated by subtracting the actual spending from the total fiscal year allotment, then adding the previous year's carry-forward amount.*

Table 2. Multi-year budget summary at the end of the 2012 competition.

SUBATOMIC PHYSICS ENVELOPE MULTI-YEAR COMMITMENTS BY CATEGORY End of 2012 Competition					
	2012	2013	2014	2015	2016
RTI - COMMITTED	$0	$0	$0	$0	$0
RTI - NEW (2012 Competition)	$583,859	$55,000	$0	$0	$0
RTI - TOTAL	**$583,859**	**$55,000**	**$0**	**$0**	**$0**
THEORY - COMMITTED	$2,497,500	$1,806,500	$988,500	$481,000	$0
THEORY - NEW (2012 Competition)	$723,000	$762,000	$768,000	$585,000	$585,000
THEORY - TOTAL	**$3,220,500**	**$2,568,500**	**$1,756,500**	**$1,066,000**	**$585,000**
EXP OPS** - COMMITTED	$5,251,000	$3,150,000	$654,000	$534,000	$0
EXP OPS - NEW (2012 Competition)	$11,127,000	$8,845,948	$8,479,000	$1,450,000	$1,472,000
EXP OPS - TOTAL	**$16,378,000**	**$11,995,948**	**$9,133,000**	**$1,984,000**	**$1,472,000**
MRS - COMMITTED	$2,563,932	$461,000	$196,000	$0	$0
MRS - NEW (2012 Competition)	$8,500	$22,500	$22,500	$0	$0
MRS - TOTAL	**$2,572,432**	**$483,500**	**$218,500**	**$0**	**$0**
TOTAL - COMMITTED	$10,312,432	$5,417,500	$1,838,500	$1,015,000	$0
TOTAL - NEW (2012 Competition)	$12,442,359	$9,685,448	$9,269,500	$2,035,000	$2,057,000
GRAND TOTAL	**$22,754,791**	**$15,102,948**	**$11,108,000**	**$3,050,000**	**$2,057,000**
TOTAL ENVELOPE	**$22,667,051**	**$22,667,051**	**$22,667,051**	**$22,667,051**	**$22,667,051**
ADJUSTMENT (FORWARD BORROW / REIMBURSEMENT)	**-$150,000**	**-$150,000**	**$0**	**$0**	**$0**
CARRY FORWARD (2012) / AVAILABLE	**$10,917**	**$7,414,103**	**$11,559,051**	**$19,617,051**	**$20,610,051**

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

Table 3. Breakdown of multiyear commitments at the end of the 2012 competition.

	2012	2011	2010	2009	2008	2007*
Theory	14%	14%	14%	14%	15%	16%
RTI	3%	6%	4%	8%	16%	14%
Total Research Ops	83%	80%	82%	82%	69%	70%
Exp. Ops	72%	68%	69%	69%	59%	61%
MRS	11%	13%	13%	13%	11%	10%

** Takes into account the fact that SNOLAB's MRS grant was subsequently paid from outside the envelope.*

Table 4. Envelope share in theory, experimental operations, and equipment, from 2007 to 2012.

XII. Policy Matters

At the end of the competition, the Evaluation Section and NSERC representatives came together for a session devoted to policy matters. Isabelle Blain – Vice-President, Research Grants & Scholarships – attended this session. SAPES members underscored the increasingly challenging

funding pressures faced by the envelope. Retiring SAPES members voiced their concerns about the cancellation of the autumn visits to universities and national laboratories, and explained the benefits they had experienced before that aspect of the Section's operating procedures was eliminated. Moreover, the Section recommended that NSERC considers reinstating the fall face-to-face orientation and policy meeting.

Appendix 1

SUBATOMIC PHYSICS EVALUATION SECTION

2012 COMPETITION

LARGE PROJECT DAY

Sunday, February 12, 2012
Salon Laurier (Lower Level)
Marriott Hotel, 100 Kent Street, Ottawa, Ontario

7h45 - 8h30	***Committee's Working Breakfast – in camera***	
8h30 - 8h55	Meeting with the Institute of Particle Physics – *in camera*	W. Trischuk
8h55 - 9h20	Meeting with the Canadian Institute of Nuclear Physics – *in camera*	P. Garrett / K. Sharma
9h20 - 9h45	Meeting with TRIUMF – *in camera*	R. Kruecken
9h45 - 10h10	Meeting with SNOLAB – *in camera*	N. Smith
10h10 - 10h35	Meeting with Perimeter Institute – *in camera*	C. Burgess
10h35 - 10h55	***Coffee Break***	
10h55 - 11h55	The ATLAS Experiment at the CERN LHC	R. McPherson
11h55 - 13h00	***Lunch***	
13h00 - 13h45	Gamma-Ray Spectroscopy at ISAC	A. Garnsworthy
13h45 - 14h30	DEAP-3600 Installation, Commissioning and Analysis	M. Boulay
14h30 - 15h15	SNO+ Construction, Commissioning and First Data	M. Chen
15h15 - 15h30	***Coffee Break***	
15h30 - 16h15	Search for Dark Matter with the PICASSO Experiment	V. Zacek
16h15 - 16h40	Meeting with Chair of Long Range Plan Committee – *in camera*	M. Butler
16h40	***Committee meets in camera***	

NOTE: 1 hour presentations: 30 min. of presentation and 30 minutes for Q&A.
45 min. presentations: 25 min. of presentation and 20 min. for Q&A.
25 min. presentations: 15 min. of presentation and 10 min. for Q&A.