



# Canadian Institute of Nuclear Physics Institut canadien de physique nucléaire

## November 2016 Newsletter

The Canadian Institute of Nuclear Physics (CINP) is a formal organization of the Canadian nuclear physics research community to promote excellence in nuclear research and education, and to advocate the interests and goals of the community both domestically and abroad.

### 1. CINP Board of Directors (2016-17)

The CINP Institutional Members had their annual meeting via teleconference on May 6. One of the business was to elect two new Board members. The new Board is listed below, along with their assigned responsibilities.

Name	Institution	Role	E-mail	Term Ends
Jens Dilling	TRIUMF		jdilling@triumf.ca	June, 2018
Gerald Gwinner	University of Manitoba	Vice-President	gerald.gwinner@umanitoba.ca	June, 2017
David Hornidge	Mt. Allison University		dhornidge@mta.ca	June, 2018
Sangyong Jeon	McGill University		jeon@physics.mcgill.ca	June, 2019
Rituparna Kanungo	Saint Mary's University	President	ritu@triumf.ca	June, 2019
Jeffery Martin	University of Winnipeg	Secretary	j.martin@uwinnipeg.ca	June, 2017

We thank outgoing Board member Jean Barrette for many years of service to the CINP. He assisted with the founding of the Institute in 2005-07 as well as his two terms as Board member.

### 2. NSERC Support for CINP

The CINP gratefully acknowledges support from NSERC in the form of a Subatomic Physics Major Resources Support (SAP-MRS) grant. This grant supports the CINP's external conference support program, the undergraduate research scholarship program, expenses for the Long Range Plan, and other initiatives. The CINP MRS grant was renewed for 5 years in the 2015 competition, and the installment for 2016-17 is \$44,000.



### 3. CINF Conference Support

The CINF extends partial funding to workshops, meetings and conferences of broad relevance to nuclear physics in Canada. Requests are appraised against the mission and goals of the CINF, and funding is contingent upon satisfactorily showing that the event will further the aims of the CINF and be of benefit its members.

Application forms for external conference support are available from <http://cinp.phys.uregina.ca/node/22> and should be returned to the CINF Executive Director, Garth Huber. Once it is confirmed the necessary information is received, the Chair of the Scientific Working Group most closely related to the conference topic will be consulted, and a recommendation forwarded to the CINF Board for final approval.

### 4. Welcome to our newest Institutional Member



The CINF is pleased to announce that the University of Northern British Columbia was accepted as our 9<sup>th</sup> Institutional Member at the November 21 Board Meeting. The Institutional Members are the owners of the CINF and their Delegates are solely responsible for the election of the Board of Directors. Faculty and Associate Membership in the CINF is free. Institutional members pay annual dues levied by the Board, which are used to support the operation of the CINF.

Upon receiving the news, UNBC's Delegate, Dr. Elie Korkmaz, responded: *"I am very pleased to see UNBC join CINF as an Institutional Member and feel confident that this membership will be beneficial to both sides. My biggest thanks go to Dr. Geoffrey Payne, UNBC's interim VPR, whose prompt response to the invitation received from Dr. Huber was both supportive and enthusiastic. UNBC has a long tradition of involvement in experimental nuclear physics research going back to 1993, one year before the UNBC campus was officially opened in 1994! The UNBC research program has involved two faculty members who, along with their postdoctoral fellows and graduate and undergraduate students, were members of larger Canadian or international collaborations with projects conducted at TRIUMF, the former Saskatchewan Accelerator Laboratory (SAL), and Jefferson Laboratory. Currently, UNBC researchers are involved at TRIUMF in the low-energy nuclear astrophysics program at the ISAC facility and with the new UCN facility and n-EDM project under construction. The involvement at Jefferson Lab continues in the electron scattering parity violation program with the 12-GeV Moller experiment after the (near) completion of the G0 and Qweak experiments. I am hopeful that while our input to the CINF Board will be of value to the rest of the community, our CINF membership will also help maintaining the strength of nuclear physics research at UNBC now and well into the future."*

## 5. Consultations with External Agencies

The CINP is an advocate and representative of the Canadian nuclear physics community and is asked to attend various meetings or make presentations on its behalf. Some recent or forthcoming activities include:

- The CINP Executive Director and Board provided written input to the *Advisory Panel for the Review of Federal Support for Fundamental Science* on July 18. Our letter consisted of two main recommendations:

**Recommendation 1:** *Canada needs a more consistent and coherent mechanism for the funding of large science facilities and endeavors, whether these be located in Canada (and used by both domestic and international researchers) or abroad. This might involve the creation of a new agency, or the reorganization of existing agencies with expanded terms of reference. It is crucial that this agency be science-led, consultative, strategic, and accountable for its decisions.*

**Recommendation 2:** *Canada is best served by a flexible and well-funded source of funding in support of fundamental science research. In many cases, operating grant increases have not kept pace with inflation. Furthermore, the operating funds in support of individual and team researchers, and the capital investments made as a result of external peer review, are currently not in balance. This needs to be addressed via (i) additional infusions of funds in areas of greatest need, and (ii) structural reforms to granting systems to ensure that the available operating funds are in proportion to increases in research capacity (such as from large capital investments).*

As a result of this written input, the Executive Director was invited to participate in the roundtable discussion on September 29 in Calgary. For more information on this review, and the timetable for the eventual release of its report, please visit <http://www.sciencereview.ca>

- The CINP Executive Director and Board also provided written input to *Canada's Innovation Agenda Review* on July 31. This is a much broader review covering many aspects of entrepreneurship, global science excellence, clean growth, the digital future, and venture capital. Our input focused on HQP training and science excellence. We have yet to receive any response. For more information on this review, please visit <http://nationofinnovators.ca/>
- During the CAP Congress in Ottawa, the CINP and IPP Executive Directors took the opportunity to meet with Gilles G. Patry, President and CEO of CFI and B. Mario Pinto, President of NSERC, to discuss issues related to the funding of Subatomic Physics, including the possible impact of the above two reviews.
- In September, the CINP was asked by Dr. Hiro Tanaka to provide input on the ICFA Neutrino Panel's *Roadmap for the International, Accelerator-Based Neutrino Program, Discussion Document*. The report was reviewed by the Executive Director and the Chairs of the Scientific Working Groups. Our response noted the importance of a comprehensive program of neutrino-nucleus measurements if the dominant systematic uncertainties in neutrino-nucleon/nucleus cross sections that limit the precision in the extracted neutrino oscillation parameters are to be made smaller. We encouraged further investments in this field, and also noted the opportunities for neutrino-nucleus phenomenology.
- The CINP and IPP presented the joint document on *The Context and Environment of Canadian Subatomic Physics Research at Canadian Universities* to the Subatomic Physics Evaluation Section (SAPES) at their November 2 fall policy meeting. This document is needed because many SAPES members are not very familiar with the Canadian research funding process and the research environment at Canadian universities. **We plan to update this document**

in advance of next year's meeting and seek your input for improvements. The report can be downloaded from: <http://cinp.phys.uregina.ca/node/219>

- The CINP will make a 15 minute in-camera presentation to SAPES on *The Breadth of Canadian Nuclear Physics Research and Important Current and Future Priorities* at Large Projects Day, scheduled for February 26, 2017 at NSERC headquarters in Ottawa. Please send information on your significant 2016 research highlights, new research capabilities, or honors received, to the CINP Executive Director, Garth Huber, who will prepare the presentation from your submissions and relevant information from the Subatomic Physics Long Range Plan.

## 6. NSERC Subatomic Physics Long Range Plan 2017-21 ([www.lrp2017.ca](http://www.lrp2017.ca)) (submitted by Sarah Overington)

### **Subatomic Physics** **Long Range Plan 2017-2021**

### **Physique Subatomique** **Plan à Long Terme 2017-2021**

The Canadian Subatomic Physics Long-Range Plan 2017-2021 is now complete and available in both official languages at <http://www.subatomicphysics.ca>. Copies of the report will be sent to researchers and institutions. On behalf of NSERC, we would like to thank the members of the Long-Range Plan Committee for their dedication and contributions to this process. We would like to express our appreciation to Dr. Dean Karlen for his effective leadership and facilitation as Chair of the Committee. We would also like to thank you for your active participation. The level of engagement by the Canadian subatomic physics research community over the last year has been tremendous and has been an important part of the success of this process.

## 7. Nuclear Science Week (submitted by Jason Donev)

In October 2016 the Universities of Saskatchewan, Regina, Guelph and Calgary held public outreach events to commemorate Nuclear Science Week. The Fedoruk Centre brought a guest speaker to Regina and Saskatoon who talked about the biological effects of low doses of radiation both on campus and at a local pub. The U of G did a nuclear science open house where a portion of the chart of nuclides was built with Lego. The U of C did an open house talking about how nuclear science fits into atmospheric science, astrophysics, and radiation treatment for cancer. The U of C also did a presentation on the three dimensional interactive chart of the nuclides that has been developed:



**Nuclear Science Week**

<http://energyeducation.ca/simulations/nuclear/nuclidechart.html>

We hope to continue on with Nuclear Science Week in 2017 and include more institutions. If you are interested in hosting something next fall, please contact Jason Donev at [jmdonev@ucalgary.ca](mailto:jmdonev@ucalgary.ca) for more information.



## 8. Undergraduate and Graduate Student Conference Support

The CINP awarded three \$500 travel grants to support undergraduate students giving talks on nuclear physics related projects at the 2016 Canadian Undergraduate Physics Conference (CUPC) at Dalhousie University in Halifax, NS on October 13-16, 2016. The applications were evaluated by: Drs. Gerald Gwinner (Manitoba), Sangyong Jeon (McGill) and Garth Huber (Regina).

Student	Supervisor	CUPC Talk Title
Kevin Ortner (SFU)	Corina Andreiou (SFU)	Beta decay of Indium-118 with GRIFFIN
Sara Ripley (Mt. Allison)	David Hornidge (Mt. Allison)	A Dedicated Power Supply for Counting Room Raspberry Pis
Maeve Wentland (Mt. Allison)	David Hornidge (Mt. Allison)	Neutron Scalar Polarizabilities: Background Simulations for Experimental Extraction via Compton Scattering

In addition, the CINP awarded six \$500 travel grants to encourage the participation of Canadian graduate students at the APS-DNP meeting in Vancouver, BC on October 13-16, 2016. This is a one-time program to celebrate the meeting location in Canada, we do not intend to provide similar support when the APS-DNP meets in the USA. The applications were evaluated by: Drs. David Hornidge (Mt. Allison University), Sangyong Jeon (McGill University) and Art Olin (TRIUMF).

Student	Supervisor	APS-DNP Talk Title
Taraneh Andalib (Manitoba)	Jeff Martin (Winnipeg)	Magnetic Fields for Neutron Electric Dipole Moment Measurement at TRIUMF
Tegan Beattie (Regina)	Zisis Papandreou (Regina)	Analysis of the $\eta(548) \rightarrow \pi^+ \pi^- \pi^0$ and $\eta(958) \rightarrow \pi^+ \pi^- \eta$ Channels using a 8-9 GeV Tagged Photon Beam for the GlueX Experiment
Jessica Campbell (Dalhousie)	Adam Sarty (Saint Mary's)	Measurement of the Low $Q^2$ Elastic Form Factor Ratio $\mu G_E/G_M$ using Electron Scattering Double Spin Asymmetries
Dilli Paudyal (Regina)	Garth Huber (Regina)	Nuclear Structure Observable with Polarized Target and Polarized Real Photon Beam at Mainz Microtron
Jaspreet Randhawa (Saint Mary's)	Rituparna Kanungo (Saint Mary's)	Investigation of Resonances in $^{20}\text{Mg}$ : Implications for Astrophysics and Nuclear Forces
Sakib Rahman (Manitoba)	Juliette Mammei (Manitoba)	Detector Simulations and Background Studies for the MOLLER Experiment

All students were asked to acknowledge the financial support by the CINP in their presentation.

One student kindly responded: *“I just want to say thank you for this grant. This has given me the initial funding needed to attend the conference, and I am very excited to be going there!”*

## 9. Winter Nuclear and Particle Physics Conference (WNPPC 2017)

(submitted by Michel Lefebvre on behalf of the WNPPC organizing committee)



The 54th Winter Nuclear and Particle Physics Conference (WNPPC) will take place February 16-19, 2017, in Banff, Alberta. The Winter Nuclear and Particle Physics Conference is a national meeting for the Canadian subatomic physics community, with a special focus on providing a forum for junior researchers (students and postdocs) and interaction with groups across Canada.

Important dates to consider:

December 16, 2016: Early registration deadline - early registration is free for students;

December 16, 2016: Hotel room booking deadline - rooms will start to be released after this date;

January 16, 2017: Abstract submission deadline.

The conference will start Thursday 16 February late afternoon with registration, followed by dinner and the first conference session and a reception, therefore plan to arrive at the latest Thursday afternoon. Please ensure that you register for the conference, and that you register at the Banff Centre. For more details please consult the conference web site <http://wnppc.triumf.ca>

### **2017 WNPPC Graduate Student Travel Awards**

The Canadian Institute of Nuclear Physics (CINP) is making available four graduate student travel awards to the 2017 WNPPC. Each award will be for up to \$500 towards student travel expenses. Students must be enrolled in graduate studies at a Canadian university and performing research in experimental or theoretical nuclear physics. The application deadline is January 16. For more information and application forms, please visit: <http://cinp.phys.uregina.ca/node/180>

## 10. Important Milestone Reached for UCN at TRIUMF (submitted by Jeffery Martin)

Tuesday, November 22, 2016: Celebration in the TRIUMF cyclotron Main Control Room, after the first proton beam was successfully delivered down the new beamline to the neutron spallation target.

In the future, we will use the source to deliver Ultra-Cold Neutrons (UCN) to experiments on the fundamental properties of the neutron. Our flagship experiment will be an experiment to measure the electric dipole moment of the neutron. If we find it to be nonzero, it will signify a new source of CP violation, and could help in understanding the matter-antimatter asymmetry of the universe.



## **11. CINF Contact Information**

### **CINF Executive Director:**

If you require information about any CINF programs, please do not hesitate to contact:

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Saint Mary's University  
McGill University  
University of Manitoba  
University of Regina  
TRIUMF

Mt. Allison University  
University of Guelph  
University of Winnipeg  
University of Northern British Columbia

*This Newsletter was edited by Garth Huber. Email regarding the content of this newsletter, or suggestions for content in future CINF newsletters should be sent to huberg@cinp.ca*