

Canadian Institute of Nuclear Physics Institut canadien de physique nucléaire

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.

April 2016 Newsletter

1. CINP Sessions at the CAP 2016 Congress

As is now customary, the CINP and IPP are hosting a joint session immediately prior to the official start of the CAP Congress at the University of Ottawa. Our schedule for the meetings is below. **Please be sure to arrive on Sunday and attend the CINP sessions!**



Time	Event
Sunday, June 12	
	Joint CINP/IPP session
13:30	NSERC SAPES Report – Adam Ritz (30+5)
14:05	CFI and Subatomic Physics – Olivier Gagnon (20+5)
14:30	TRIUMF Report – Jonathan Bagger (30+5)
15:05	SNOLab Report – Nigel Smith (20+5)
15:30	Subatomic Physics LRPC – Dean Karlen (30+15)
16:15	Coffee (15)
16:30	CINP Annual General Meeting (90)
18:00	CINP Board Meeting (by invitation only)

2. NSERC Support for CINP

The CINP gratefully acknowledges support from NSERC in the form of a Major Resources Support (MRS) grant. This grant was renewed for 5 years in the 2015 competition. The installment for 2016 is \$44,000. The grant also supports the CINP's external conference support program, the undergraduate research scholarship program, representation travel, and other initiatives. We look forward to your input at the AGM on how best we should make use of these funds.



3. CINP Individual Membership

In the last year, we had a small increase in the number of faculty members, but a decrease in associate memberships, as a number of former graduate students did not renew their applications after graduation.

Please encourage your grad students and PDFs to join and contribute to the activities of the Scientific Working Groups (SWGs). “Associate class” memberships are typically renewed every three years, to ensure that continued membership is appropriate, and that our records remain up to date. An associate membership may be renewed if the individual is no longer a Canadian resident, provided he/she intends to permanently return to Canada within the next 5 years.

The membership form and introduction letter are posted at:

<http://cinp.phys.uregina.ca/node/19>

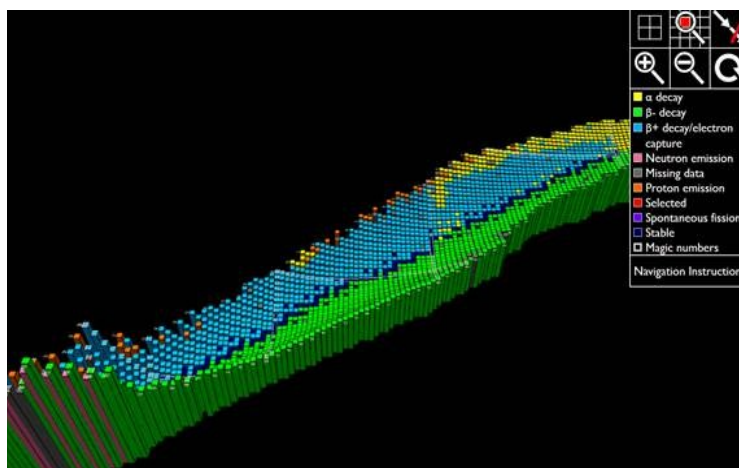
or contact Garth Huber for further information.

CINP Individual Membership - April 20, 2016			
Total Membership	113	Nuclear Astrophysics SWG	40
Faculty-class Members	70	Nuclear Structure SWG	50
Associate Members	43	Fundamental Symmetries SWG	44
Experimentalists	83	Hadrons/QCD SWG	34
Theorists	29	Education & Training SWG	38

4. Interactive Chart of the Nuclides

Submitted by Jason Donev,
University of Calgary

The chart of the nuclides is a powerful tool for research, but now the chart of the nuclides can be used as a teaching tool as well. Jacqueline Williams, a student of mine, has created a new interactive chart of the nuclides. This new chart emphasizes the inter-relationship among nuclides, making it better for teaching than traditional charts of the nuclides.



The chart shows decay chains and branch decays and can be accessed on a computer or smart phone. This chart is not meant to replace the excellent charts that already exist; we are deliberately providing less data to make this something that can be used to teach about the chart of nuclides to students. Please explore both the two dimensional and three dimensional versions of the chart and let us know what you think: http://energyeducation.ca/chart_of_nuclides

Jason Donev
jmdonev@ucalgary.ca

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.

- The CINP was asked to make a 20 minute in-camera presentation to the NSERC Subatomic Physics Evaluation Section (SAPES) Large Projects Day, in Ottawa on Sunday March 6. In addition to a status report on CINP activities and questions on the CINP MRS grant application, we were asked to provide information on the breadth of Canadian nuclear physics research and important current and future priorities. If time permits, this part of the presentation will be shown to members in attendance at the AGM. Thank you to all those who contributed highlights for inclusion in the presentation!
- The Executive Directors of the CINP and IPP met with various officials in Ottawa following Large Projects Day, to discuss issues of relevance to the funding of subatomic physics research. Meetings were held with:
 - NSERC: Elizabeth Boston, Director of Research Grants for Mathematical, Environmental and Physical Sciences.
 - CFI: Gilles Patry, President and CEO; Guy Levesque, Vice-President, Programs and Performance.

We are endeavoring to meet with the Honourable Kirsty Duncan, Minister of Science. She had other commitments when we tried to meet with her in March, and we will try again to meet with her in June.

- The CINP and IPP are jointly invited to make a presentation at the SAPES Fall Policy meeting on “The Context and Environment of Subatomic Physics Research at Canadian Universities.” This presentation and accompanying document are intended to address some of the deficiencies caused by the cancellation of the SAPES fall site visits, given their value to both international and domestic members of the committee. We expect to update this document in advance of the 2016 fall policy meeting, and we will appreciate your input once we get closer to that date (late October).
- The CINP is asked to provide input to NSERC on a periodic basis, including suggestions for members of the Subatomic Physics Evaluation Section (SAPES), to replace the specific nuclear physics expertise of outgoing members. In recent years there have been few Canadian experimentalists on the committee, caused in part by the new Tri-Council harmonized conflict-of-interest guidelines. NSERC is taking steps to address this, if you have any suggestions for both domestic or international members please let Garth Huber know (contact info at the end of the newsletter). When making suggestions, please keep in mind that committee members cannot be applicants in that competition.
- The CINP Executive Director is an ex-officio member of the NSERC Subatomic Physics Long Range Planning Committee, and he has continued to provide input. We thank the many members of the Canadian nuclear physics research community who were able to attend the virtual Town Hall meeting on February 25, where the draft recommendations were presented for the first time to the community. For more information on the LRPC please visit <http://www.lrp2017.ca>
- The Advisory Committee on TRIUMF (ACOT) is a panel of international experts panel that meets and reports to the NRC twice a year. Garth Huber represents the CINP as a “community observer”, providing feedback on TRIUMF's planning and operations. If you have specific information that would be useful to the CINP's input, please let us know.

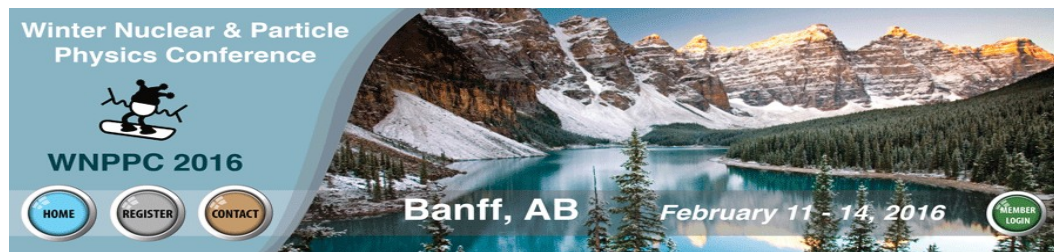
6. GlueX @ JLab Commissioning Milestones Reached

Submitted by Zisis Papandreou, University of Regina

A long-standing goal of hadronic physics has been to understand how the quark and gluonic degrees of freedom, that are present in the fundamental QCD Lagrangian, manifest themselves in the spectrum of hadrons. In this vein, the GlueX Experiment at Jefferson Lab aims to conduct a definitive mapping of states in the light meson sector with an emphasis on searching for exotic hybrid mesons.

The GlueX detector is in its last stages of commissioning and has been collecting “opportunistic physics” data in the spring 2016 running of the CEBAF accelerator, from early February to the end of April. The 12-GeV machine tune has been steadily improving and has delivered linearly polarized photons with 40% polarization to Hall D/GlueX, using diamond radiators in two polarization (parallel and perpendicular) configurations. Typical event rates of 35 kHz and sustained data rates of 750 MB/s have been achieved, at live-times exceeding 90%. The total number of good triggers are estimated to reach 20 billion in this period, allowing copious π^0 and ρ^0 photo production events to measure the beam asymmetry as a function of both s and t Mandelstam invariants. Additionally, large data sets of ω and η' photo production are being accumulated, as well as sufficient events on the $f_2(1270)$ and $a_2(1320)$ light, unflavoured mesons. The first GlueX “production physics” running will commence in October of this year.

7. WNPPC Student Conference Support



The CINP awarded \$500 travel grants to support graduate students giving talks at the 2016 WNPPC in Banff, AB. Travel grants were given to the following four qualified applicants:

Student	Supervisor	WNPPC Talk Title
Joosun Park (UBC)	Reiner Kruecken (TRIUMF)	Decay Modes of $N=Z$ Nuclei near $^{100}\text{Sn}^*$
Andrzej Pokrata (Alberta)	Andrzej Czarnecki (Alberta)	New Single Photon Positronium Decay Channel
Jaspreet Randhawa (St. Mary's)	Ritu Kanungo (St. Mary's)	Investigation of Resonances in ^{20}Mg : Implications for Nuclear Astrophysics and Nuclear Structure
Shihao Wu (Memorial)	Aleksandrs Aleksejevs (Memorial)	Search for Dark Matter: Dark Photon and Z' Boson

8. CINP Undergraduate Research Scholarships (URS)

The second competition for the CINP URS was recently completed. The intent of the program is to allow gifted undergraduates to work with a supervisor on nuclear physics research for 16 weeks this summer. The scholarship is for \$3500, which must be supplemented by the supervisor. In addition, if the supervisor intends to send the student to a laboratory or work with a second collaborator for an extended period in the summer, the CINP can contribute up to an additional \$1300 to help cover transportation and lodging expenses.

Eleven applications were received, which were evaluated by a committee consisting of: Jean Barrette (McGill), Barry Davids (TRIUMF) and Jason Donev (Calgary). The caliber of the competition was very good, and we regret that we were only able to award scholarships to the following five students.

Student	Supervisor	Project Title	Travel
Christopher Barnes (Saint Mary's)	Rituparna Kanungo (Saint Mary's)	Spectroscopy of ^{20}Na for exploring the element synthesis reaction path to the <i>rp</i> -process	Yes
Skyler Freeman (Waterloo)	Makoto Fujiwara (TRIUMF)	ALPHA-g Time Projection Chamber Prototyping	No
Miriam Hewlett (Acadia)	Svetlana Barkanova (Acadia)	Impact of dark photon and Z' boson on Belle-II observables	Yes
Matthew Strugari (Regina)	Garth Huber (Regina)	Hardware and Software development for Nuclear Physics Experiments at Jefferson Lab	Yes
Maeve Wentland (Mt. Allison)	David Hornidge (Mt. Allison)	Neutron Polarizabilities at MAMI-A2	Yes

Now that the URS program has run successfully for the last 3 years, it seems an appropriate time to review and see if adjustments should be made for next year. This item will be raised for discussion at the upcoming AGM in Ottawa.

9. 2016 Fall Meeting of the APS Division of Nuclear Physics

For only the third time, the APS-DNP will meet in Canada, this time at:

October 13-16, 2016
Sheraton Vancouver Wall Centre
Vancouver, BC

with TRIUMF serving as host institution.

Note that the days of the meeting are Thursday-Sunday. Three topical workshops will be held on the morning of Thursday, Oct. 13, topics to be announced later. The plenary session will take place on Thursday afternoon, with the welcome reception to be held immediately afterward. The parallel scientific sessions will be held Friday and Saturday, ending at Sunday noon. A tour of the TRIUMF experimental facilities will be arranged if there is sufficient interest.

Through the CAP-APS reciprocal agreement, CAP members may register at member rates and submit papers with the same privileges and limitations as APS members. The deadline for abstract submission will be announced later, but it is typically in the second half of June.

10. 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.

We hope you will be able to attend one of the following CINF-sponsored conferences:

International Conference on Direct Reactions with Exotic Beams (DREB 2016)



The DREB conference is part of a biennial series with the previous meetings held in Darmstadt (2014), Pisa (2012), Tallahassee (2009), Wako (2007), East Lansing (2005), Surrey (2003), Orsay (2001) and East Lansing (1999).

The scientific program will be devoted to the latest experimental and theoretical research and developments in nuclear reactions with exotic nuclei. The topics will include :

- Exotic structures through direct reactions
- Shell evolution through direct reactions
- Spectroscopy of nuclear levels and nuclear shapes through direct reactions
- Probing the nuclear force through direct reactions
- Theoretical developments of direct reactions
- Nuclear astrophysics
- New instrumentation for direct reaction studies of exotic nuclei

For more information, please visit <http://conferences.triumf.ca/DREB2016/index.html>

Precision Radiative Corrections for Next Generation Experiments Jefferson Lab, May 16-19, 2016

A majority of approved physics experiments that will be running with 12-GeV electron beams at JLab require at least a per-cent accuracy in the measurements of differential cross sections and polarization asymmetries, making electromagnetic corrections crucial for interpretation of data. The workshop will address outstanding issues of QED radiative effects for a variety of critical research areas relating to hadronic physics and fundamental symmetries.

For more information, visit: <https://www.jlab.org/conferences/radiative2016/>

11. CINF Governance

CINF Institutional Members:

Saint Mary's University
University of Guelph
University of Regina

Mt. Allison University
University of Manitoba
TRIUMF

McGill University
University of Winnipeg

The CINF is supported by eight institutional members, representing universities in 6 provinces plus TRIUMF. The institutional members are the owners of the CINF and are solely responsible for the election of the Board of Directors. Faculty and associate membership in the CINF is free. Institutional members annual dues are used to support the operation of the CINF and pay expenses not eligible to the CINF's NSERC grant, such as the partial teaching release for the Executive Director. If your university is not yet an Institutional Member, we encourage you to contact Garth Huber for further information.

The Institutional Members AGM is scheduled for May 6, to elect two Board members and transact other official business of the CINF.

CINF Board of Directors (2015-16)

Name	Institution	Role	E-mail	Term Ends
Rituparna Kanungo	Saint Mary's University	President	ritu@triumf.ca	June, 2016
Jean Barrette	McGill University		jean.barrette@mcgill.ca	June, 2016
Gerald Gwinner	University of Manitoba	Vice-President	gerald.gwinner@umanitoba.ca	June, 2017
David Hornidge	Mt. Allison University		dhornidge@mta.ca	June, 2018
Jeffery Martin	University of Winnipeg	Secretary	j.martin@uwinnipeg.ca	June, 2017
Jens Dilling	TRIUMF		jdilling@triumf.ca	June, 2018

CINF Executive Director:

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

Garth Huber, Ph.D.
CINF Executive Director
c/o University of Regina
306-585-4240
huberg@cinp.ca

CINF Treasurer:

Sonia Bacca
TRIUMF
bacca@triumf.ca

CINF Website Server:

Zisis Papandreou
University of Regina
zisis@uregina.ca

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