



Canadian Institute of Nuclear Physics Institut canadien de physique nucléaire

April 2013 Newsletter

Prepared by: Garth Huber

CINP Sessions at the CAP 2013 Congress.

Following the tradition started last year, the CINP activities at this year's CAP Congress in Montreal will be held immediately prior to the official start of the Congress, on the morning of Monday, May 27, 2013. Please be sure to arrive early and attend the CINP sessions!

Time	Event	Speaker
Sunday, May 26		
19:00	CINP Board Meeting (by invitation only)	Kumar Sharma
Monday, May 27		
8:30	Joint CINP/IPP session	
	NSERC SAP ES Chair's report	Gerald Gwinner
	TRIUMF Scientific Director's report	TBA
	SNOLAB Director's report	TBA
10:15	Coffee	
10:45	CINP Annual General Meeting	Garth Huber

CINP Graduate Fellowships.

In order to foster excellence in graduate nuclear physics research, and to make Canada a more attractive place for graduate students in nuclear physics, the CINP has recently awarded two Graduate Fellowships for 2013-14. Six applications were received from qualified graduate students performing research within the academic areas covered by the CINP charter and enrolled in a full-time Ph.D. program at a Canadian university. The applications were evaluated by a committee consisting of Roby Austin, Sonia Bacca, David Hornidge and Kumar Sharma. Each fellowship is valued at \$12,000 and the awardee's supervisor or home institution agreed to at least match the fellowship from research or institutional funds.

The committee unanimously recommended the fellowships be awarded to the following awardees:

Gojko Vujanovic, McGill University

Project: *Studying strongly interacting matter at high temperatures via electromagnetic probes*

Recently, a novel form of matter was observed for the first time at RHIC located at the Brookhaven National Laboratory: the Quark-Gluon Plasma (QGP). The existence of QGP was theoretically predicted by Quantum Chromodynamics (QCD) calculations done on a computer lattice which suggested that QGP is a state composed of quasi-free quarks and gluons. Both experimental data and theoretical QCD calculations on the lattice indicate the rapid transition from QGP phase to a lower energy hadronic gas (HG) phase composed of quark bound states. I'm focusing my research on the most penetrating probe for studying these phases of matter: direct electromagnetic emission (EM). EM probes, in particular di-electrons, can explore the bulk properties of the medium produced at RHIC via the study of its flow moments; since flow is sensitive to variations in the medium's composition. In fact, the time evolution of the second flow moment or elliptic flow is central in my studies as it is related to the equation of state of QGP and HG.

Igor Kozlov, McGill University

Project: *Hydrodynamical model of heavy ion collision bulk viscosity*

My scientific interests concentrate on phenomenological research in the field of QCD. Of particular interest to me are problems of analyzing hadronic matter at extremely high temperatures and densities that are produced in Heavy Ion Collisions. A number of convincing evidences show that evolution of the quark-gluon plasma (QGP) created at RHIC and the LHC can be successfully described by a hydrodynamic model. However, there still exist a number of challenging problems. In particular, photon observables (sensitive to early time expansion of the QGP) calculated within this framework do not match the experimental data, which reveal higher photon yield and elliptic flow at low transverse momenta. Understanding the reasons of this lack of correspondence, and implementing the necessary improvements into the used hydrodynamic and photon production models to find agreement between experimental and computational results is my current objective.

We do not yet know if funds will be available for a fellowship competition in 2014-15, but our intention is to have future fellowship competitions as funds permit.

Student Conference Support (submitted by Corina Andreoiu).

The CINP awarded four \$500 travel grants to support graduate students giving talks at the 2013 Winter Nuclear and Particle Physics Conference (WNPPC) in Banff. The recipients are:

Dorothea vom Brunch, UBC

The TRIUMF PiENu experiment

Usman Rizwan, SFU

Acceptance tests of GRIFFIN HPGe clovers at SFU

Tegan Macdonald, UBC

Exploring a calibration discrepancy at SAGE & GALLEX: The Direct Q-value measurement of $^{51}\text{Cr}(e, \nu_e)^{51}\text{V}$ at TITAN

Evan Rand, University of Guelph

Investigation of the E2 and E3 matrix elements in ^{200}Hg using elastic scattering

The CINP also awarded six \$300 travel grants to support undergraduate students giving talks at the 2012 Canadian Undergraduate Physics Conference (CUPC) in Vancouver. The recipients are:

Chantal Nobs, TRIUMF

Simulating and Testing the TRIUMF Bragg Ionization Chamber

Chelsea Braun, University of Manitoba

Nuclear Physics in Space

Allison Radich, University of Guelph

Investigation of ^{124}Xe nuclear structure with the $\delta\pi$ spectrometer at TRIUMF-ISAC

Michael Desrochers, SFU

Electron Scattering off the Triton from Chiral Potentials

Sakib Rahman, University of Manitoba

Simple Ultra Cold Neutron Simulations: Aid in Detector Design for a UCN-EDM Experiment

Alysa Obertas TRIUMF

Analysis of α - α Scattering and Techniques for Nuclear Reaction Theory

CINP Executive Director.

The CINP is pleased to announce that the arrangements to appoint Garth Huber, Professor of Physics at the University of Regina, as Executive Director have been completed. Dr. Huber's appointment will start May 1, 2013 and run through June 30, 2016. You may reach him at Email: huberg@uregina.ca Tel: 1-306-585-4240 Fax: 1-306-585-5659.

Consultations with External Agencies.

The CINP is regularly invited to attend various meetings or make presentations on behalf of the Canadian nuclear physics community.

- In December, Kumar Sharma attended the TRIUMF ACOT meeting as an observer. ACOT is considering a possible enhancement in the role of observers such as CINP in their meetings, and we are awaiting further details.
- In January, we encouraged CINP members to fill out the NSERC on-line survey on the metrics that might be used in a future Reallocations Exercise. In addition, the CINP Board wrote to Suzanne Fortier, President of NSERC, urging that the Subatomic Physics Funding Envelope be maintained, that the SAP-LRPC continue providing periodic review of the management of this envelope, and that the cost of research, and the trends in these costs, be given significant weight in any reallocation.
- In February, Kumar Sharma and Garth Huber made an in-camera presentation to the NSERC Subatomic Physics Evaluation Section. The Scientific Working Group (SWG) Chairs were consulted in the preparation of a brief scientific highlights presentation, which was shared with the committee.

National Research Council (NRC) Evaluation of TRIUMF.

The CINP has recently been invited to provide input to the NRC evaluators as part of the decision process for TRIUMF's core funding for the period 2015-20. If you have specific information that would be useful to the CINP's input, please contact Garth Huber by April 26.

CINP Conference Support.

We wish to bring to the attention of faculty and associate members that the CINP may extend 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 CINP, and funding is contingent upon satisfactorily showing that the event will further the aims of the CINP and be of benefit its members.

Our most recently supported conferences include:

- Conference on the Intersections of Particle and Nuclear Physics (CIPANP 2012)
 - \$500 travel support for Canadian grad students and post-docs, based on the quality of submitted abstract for talk or poster:
 - 91: *Qweak analysis and linear regression systematics*, Mr MacEwan Scott
 - 117: *Precision mass cartography of the island of inversion using TITAN*, Dr. A. Chaudhuri
 - 119: *The Qweak experimental apparatus*, Dr. Wang P
 - 180: *Progress and research goals of the SNO+ experiment at SNOLAB*, Dr. M. Schumaker
 - 263: *Electron capture branching ratios for the intermediate nuclei in double beta decay at TRIUMF TITAN ion trap facility*, Ms. Annika Lennarz
 - 299: *The PiENu experiment at TRIUMF: a sensitive probe for new physics*, Alex Sher
- TRIUMF Summer Institute 2012
 - held jointly with the U.S. Summer School on Fundamental Neutron Physics.
 - Travel and accommodations support for six Canadian students.
- Winter Nuclear and Particle Physics Conference (WNPPC 2013)
 - Conference support.

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.

Please note: the CINF has unfortunately had to turn down some applications where the connection to nuclear physics was not clear, or if the meeting appeared to be of narrow interest (such as a collaboration meeting). Please be sure to carefully read over the criteria accompanying the application form, and contact Garth Huber if you have any questions.

NSERC Support for CINF.

The CINF gratefully acknowledges additional support from NSERC in the form of a Major Resources Support (MRS) grant. This grant supports the CINF's external conference support program, planning for the Long Range Plan, graduate fellowships, and other initiatives. The support for 2013-14 is \$22,500.

Website News (submitted by Zisis Papandreou).

The CINF and DNP websites underwent a major upgrade of their content management system to deal with security vulnerabilities but also to install a new, more flexible architecture. The latter resulted in an improved "Job Opportunities" tab on the CINF site and a photo gallery on the DNP site. Members (in good standing) of the respective organizations can get a user account on the corresponding website, that allows uploading of information such as job postings, conferences (CINF side) and photos (DNP side). Interested individuals should email their desired username to our webmaster, at zisis@uregina.ca, who will create the account.

Websites like ours require the collaboration of many for them to be successful and up to date. In particular, uploading photos of your research is immensely helpful to the community in disseminating our work more broadly, but also when it comes time to include such figures in planning documents such as the Long Range Plan. We kindly ask for your contribution to our sites.

Working Group on International Cooperation in Nuclear Physics (ICNP) of the International Union of Pure and Applied Physics (WG.9)

(submitted by Wim van Oers, Secretary of IUPAP WG.9).

Working Group 9 was formed in 2003 as an ad-hoc committee within the Commission of Nuclear Physics (C12) of IUPAP although the desirability of its formation was discussed within C12 as early as 1995 if not earlier. In 2005 at the General Assembly of IUPAP in Kaapstad, South Africa, it was approved as one of the IUPAP Working Groups, of which the most well known for the particle physics community is ICFA (International Committee on Future Accelerators) reporting to C11.

The objectives of Working Group 9, are:

- To promote international cooperation in the broadest sense with the construction and exploitation of large nuclear physics facilities – those which are intended for use by the worldwide nuclear physics community.
- To organize meetings on a regular basis, which are open to all wishing to attend, for the exchange of information on future plans for new nuclear physics facilities, be it very large multi-disciplinary facilities or facilities intended to more regional use.

- To stimulate the organization of workshops and/or symposia to discuss the future of nuclear physics and the need for facilities for the various sub-fields of nuclear physics and nuclear astrophysics: high energy heavy-ion beam facilities, rare isotope beam facilities, multi-purpose hadron beam facilities with secondary beams of particles, high energy electron beam facilities. It was also recognized that there was a need to discuss facilities which are clearly cross-disciplinary, like deep underground facilities requiring ultra low backgrounds for particle, nuclear, and nuclear-astrophysics.

WG.9 also comments in public missives about developing science funding scenarios.

WG.9 published in 2007 IUPAP Report 41 “Research Facilities in Nuclear Physics”, with as introduction a road map for nuclear physics for the next five to ten years. The electronic version of IUPAP Report 41 is being updated on a regular basis. For the electronic version see <http://www.triumf.info/hosted/iupap/icnp>. WG.9 has also initiated the formation of nuclear physics associations in Asia (ANPhA), in Latin-America (ALAFNA), and a nascent one in Africa.

WG.9 is organizing a triennial Nuclear Science Symposium, the first one at TRIUMF, July 2-3, 2010, with the second one to take place at the Laboratori Nazionali di Frascati, May 31-June 1, 2013. These symposia (open to the public) are the meeting place of the proponents of nuclear physics (e.g. Chairs and Co-Chairs of the various Long Range Plan committees), Directors of the large nuclear physics facilities, and Funding Agency representatives/government science administrators worldwide. For the proposed agenda of the Nuclear Science Symposium see: <http://www.lnf.infn.it/conference/IUPAP>

Additional information on the activities of WG.9 and its composition (membership) can be found in the first website given above.

Next Newsletter.

We encourage you to contact Garth Huber if you have any suggestions of topics for future newsletters, or if you wish to submit information which may be of broad interest to the community. Our aim is to publish at least 2 newsletters per year.

CINP Individual Membership.

The CINP is an ex-officio member on various reviews as noted above, so it is important that the CINP have as broad membership as possible. We are pleased to report that the CINP membership has grown in the past year. In addition to several new full (faculty-level) memberships, there have been many new associate memberships (primarily grad students and post-docs). To ensure that our membership records remain up to date, we periodically review the status of those with “Associate class” membership, to see if their associate membership should be extended, or if they may now qualify for “Faculty class” membership.

If your students, PDFs and colleagues are not yet members of the CINP, please consider asking them to join and contribute to the activities of the Scientific Working Groups (SWGs). The membership form and introduction letter are posted at:

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

or contact Garth Huber for further information.

CINP Membership April 1, 2013			
Total Membership	98	Nuclear Astrophysics SWG	28
Faculty-class Members	65	Nuclear Structure SWG	40
Associate Members	33	Beyond the Standard Model SWG	38
Experimentalists	75	Hadrons/QCD SWG	25
Theorists	23	Education & Training SWG	29

CINP Scientific Working Group Chairs.

Please direct any questions or new ideas to the following Chairs.

Working Group	Chair	Institution	E-mail
Beyond the Standard Model	Gerald Gwinner	University of Manitoba	gwinner@physics.umanitoba.ca
Hadron Structure/QCD	Charles Gale	McGill University	gale@physics.mcgill.ca
Nuclear Astrophysics	Barry Davids	TRIUMF	davids@triumf.ca
Nuclear Physics Education & Training	Corina Andreoiu	SFU	caa12@sfu.ca
Nuclear Structure	Krzysztof Starosta	SFU	starosta@sfu.ca

CINP Institutional Membership.

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

CINP Board of Directors (2012-13).

The institutional members will meet this spring to elect two new Directors.

Name	Institution	Role	E-mail	Term Ends
Kumar Sharma	University of Manitoba	President	sharma@physics.umanitoba.ca	June, 2013 Not seeking re-election
David Hornidge	Mt. Allison University	Vice-President	dhornidge@mta.ca	June, 2014
Paul Garrett	University of Guelph	Treasurer	pgarrett@physics.uoguelph.ca	June, 2015
Peter Blunden	University of Manitoba		blunden@physics.umanitoba.ca	June, 2014
Jens Dilling	TRIUMF		jdilling@triumf.ca	June, 2015
Garth Huber	University of Regina		huberg@uregina.ca	Resigned as of April 30, 2013

Webmaster: Zisis Papandreou University of Regina zisis@uregina.ca