Canadian Institute of Nuclear Physics
Institut canadien de physique nucléaire

Newsletter #26, May 2025

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. Upcoming CINP Sessions at CAP Congress

The CINP and IPP are once again hosting a joint session at the CAP Congress, being held in person at the University of Saskatchewan, in Saskatoon SK.

Thursday, June 12, 2025	
7:30-8:45	**CINP Board Meeting** (by invitation only)
12:00-13:20	**CINP Annual General Meeting** (be sure to select your lunch option)
13:30-15:30	**CINP+IPP Joint Session**
	NSERC SAPES Report
	CFI Report
	Subatomic Physics Long Range Plan
	TRIUMF Report
	SNOLAB Report
	McDonald Institute Report
Friday, June 13, 2025	
8:30-17:30	**CINP Town Hall Meeting** (be sure to select your lunch option)

2. NSERC Support for CINP

NSERC provides funding for many CINP activities through the Subatomic Physics Major Resources Support (SAP-MRS) program. CINP's NSERC grant expired on March 31, and a major activity this last year was to prepare the renewal grant application. Garth Huber and Greg Hackman wrote most of the grant application, with CINP Board members proofreading and providing helpful comments. The co-applicants on the grant were: Greg, Garth and the 6 Board members.

The awarded amounts are:

FY25-26 and FY26-27 $100,000/yr
FY27-28, 28-29, 29-30 $80-82-84,000/yr

where $23,333 and $13,333 were requested in FY25-26 and FY26-27 for CINP Brief writing and CINP's share (1/3) of Long Range Plan (LRP) expenses. **After removing the LRP commitment, the remaining funds are a decrease from current activities.** This is because in both FY23 and FY24, we were spending down a surplus accrued during COVID (due to few conference and student travel support then) at the rate of ~$90k/year.

GH prepared a balanced 5 year budget plan for FY25-29 which was approved by the Board at their April 9 meeting. **The priority in the plan was to maintain direct student support as close as possible to current levels, which meant that other programs either received cuts or were discontinued.**

NSERC CRSNG

3. CINP Individual Membership

CINP membership is up modestly from last year. Through to May 1, there was 1 new faculty member and 20 new associates. This was partly offset by a loss of 1 faculty and 9 associate members (as part of our regular review process to ensure the roster remains up-to-date). The net membership gain is 11.

Please encourage your colleagues, grad students and PDFs to join and contribute to the activities of the Scientific Working Groups (SWGs). The membership form and introduction letter are posted at:

http://cinp.ca/membership

CINP Individual Membership – May 1, 2025			
Total Membership	191 (+11)	Nuclear Astrophysics SWG	76 (+4)
Faculty-class Members	93 (+0)	Nuclear Structure SWG	79 (+3)
Associate Members	98 (+11)	Fundamental Symmetries SWG	92 (+7)
Experimentalists	145 (+13)	Hadronic Physics/QCD SWG	57 (+2)
Theorists	44 (-2)	Nuclear Theory SWG	37 (+1)
		Education & Training SWG	66 (+6)

4. CINP Undergraduate Research Scholarships (URS)

The 2025 competition for the 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. Each URS is valued at $6000, which must be supplemented by the supervisor by at least $4000, to a total of not less than $1000. In addition, a $1300 travel award is available to encourage work at a laboratory, or with a collaborator for an extended period in the summer.

The scholarships were evaluated by a committee: Dr. Martin Alcorta (TRIUMF), Dr. Ruben Sandapen (Acadia, Education SWG Chair) and GH (Regina, Chair). The Board authorized an initial 6 URS to be awarded in March, at the $6000 value proposed in the NSERC application. Due to the lean grant amount, no additional URS could be awarded in April, meaning this was a tougher than usual competition (54% success rate).

Student	Supervisor	Project Title
Mika Nalbandian (Queen's)	Takamasa Momose (UBC)	Setting up the mercury-based magnetometer for TUCAN @ TRIUMF
Simon Pankratz (Winnipeg)	Russell Mammei (Winnipeg)	TUCAN nEDM large substrate deposition chamber setup and commissioning
Julia Parker (Guelph)	Liliana Caballero (Guelph)	Exploring the effect of enhanced alpha decay rates on the r-process
Aryan Prasad (Toronto)	Makoto Fujiwara (TRIUMF)	Development towards gravity measurement with laser-cooled antihydrogen
Zachary Sullivan (Regina)	Gwen Grinyer (Regina)	Resonant proton elastic scattering on ^{17}F
Ripanjeet Toor (Alberta)	Andrzej Czarnecki (Alberta)	Hadron-mediated coupling of 5 photons

The 5 year budget plan will cap the URS at 6x$6000 awards through 2029, and as a further budget measure, the **Travel Supplement currently offered as part of the URS program will be discontinued for 2026-29.** It was kept for 2025 as this was already committed as part of the announced application process.

5. Junior Scientist Travel Support Program (JSci)

The program supported PDF presentations at high profile conferences, and PDFs and Grad Students attending specialized workshops, with the aim being to improve job skills and prospects. For FY24, 5 applications totaling $6950 were funded, which exhausted the approved budget. 1 additional application (after funds were spent) could not be funded. **Due to the tight budget, the JSci program has been discontinued until April 1, 2030.**

6. 2025 WNPPC Graduate Student Travel Awards

The 2025 WNPPC was held in Banff AB. CINP offered $750 travel awards to qualified graduate students. The awards were evaluated by a committee: Dr. Gwen Grinyer (Regina, CINP President), Dr. Russell Mammei (Winnipeg, Board member), Dr. Ruben Sandapen (Acadia, Education SWG chair). 11 applications were received, of which 8 were funded 72% success rate).

Student	Supervisor	WNPPC Talk Title
Heinz Asch (SFU)	Krzysztof Starosta (SFU)	Mirror Symmetry in the f7/2 Shell below ^{56}Ni: Excited States and Electromagnetic Transition Rates in ^{55}Ni and ^{55}Co
Nathan Heinrich (Regina)	Garth Huber (Regina)	Update on PionLT DEMP factorizability studies
Alicia Postuma (Regina)	Garth Huber (Regina)	From Spin to Structure: Beam Spin Asymmetry in Exclusive Pion Electroproduction
Hussain Rasiwala (McGill)	Thomas Brunner (McGill)	Ba-tagging technique for liquid xenon based neutrinoless double-beta decay searches
Regi Hemanth (Regina)	Gojko Vujanovic (Regina)	Jet broadening in a viscous nuclear medium
Shefali (Manitoba)	Wouter Deconinck (Manitoba)	Cooling analyses of HV-HAPS detector for the Compton polarimeter in Hall A of JLab
Abbygale Swadling (Calgary)	Timothy Friesen (Calgary)	Investigating energy mixing dynamics of magnetically trapped anti-hydrogen
Frank Wu (SFU)	Corina Andreoiu (SFU)	The first measurement of the 0^{+}_{3} lifetime in ^{100}Sn using thermal neutron capture

The 5 year budget plan proposes to reduce **the number of CUPC travel awards, from 4 (80% success rate) to 2, and cap the WNPPC travel awards at 6x$750 for 2026-30.** If there are an exceptional number of applications in either competition in a given year, the Board has a small amount of flexibility to grant a one-time increase in awards.

7. CINP Conference Support

The CINP funds conferences/workshops within the nuclear physics thematic area that have a strong Canadian component (i.e. either location or organizers).

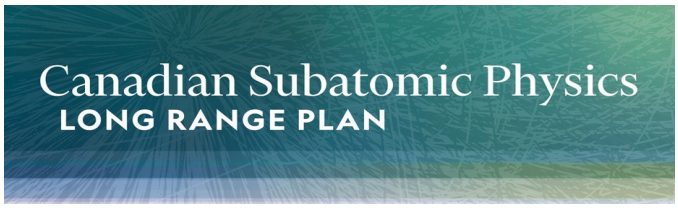
Applications are evaluated as follows:
- SWG Chairs relevant to the topic of the conference are asked their opinion on:
- does the conference fall within the area of your SWG?
- is the conference timely and appropriate in terms of scientific merit and impact?
- is it appropriate for the CINP to provide funding? i.e. will this funding further the goals of the CINP?

This evaluation is given to the Board, along with the application, for a final decision on award amount and conditions.

In FY24, two new requests were funded:
- TRISEP Summer School $1500
- TSI Summer School $3000

and the Nucleus-Nucleus Collisions conference NN2024 received the $6000 allocation that was originally approved for NN2021, but rescheduled due to COVID-19.

Within the 5 year budget plan, the conference support program will remain, but at a constrained level of $7000/year. **The Board has tightened one of the conference approval criteria and as a result has already denied to fund two conference applications received in FY25.** These policies, and application forms, are posted on the CINP website at: https://cinp.ca/conference-support



8. 2027-2034 Canadian Subatomic Physics Long Range Plan (LRP)

GH has been meeting regularly (approximately once per week) with Carsten Krauss (IPP) since the new year to coordinate the LRP. Topics included:
- Terms of Reference for the LRPC
- Committee Membership
- Conflict of Interest (COI) and Confidentiality Guidelines for LRPC members
- Role of Ex-Officio Members

We also have met several times with NSERC and CFI about the LRP, where they emphasized the need for the new LRP to provide more clarity than the past on community priorities that can go towards the evaluation of new and ongoing projects.

The LRPC membership (10 members) was finalized on May 9. An announcement to the community on LRPC membership will be made soon, once all LRPC members have formally agreed to the COI and Confidentiality Guidelines.

33 written briefs have been received so far by the CINP Brief Writing committee. We thank everyone who has taken the time to provide input! New and revised submissions will be accepted until the deadline of June 27.

CINP will have a Town Hall meeting at the CAP Congress on Friday June 13. The Town Hall agenda will be distributed as soon as it is finalized. Please try to attend, either in person or virtually.

Following receipt of the final community input in late June, the Brief Writing Committee will meet at TRIUMF in early August to draft the CINP Long Range Planning Report. There will then be several opportunities for CINP members to give their input, prior to the CINP Brief submission deadline of November 30, 2025.

The final LRP report, covering all aspects of experimental and theoretical subatomic physics, is expected to be ready by September 30, 2026.

9. Representation and Input to Various 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 and forthcoming activities include:

- The CINP presentation to SAPES took place at their Fall Context Session on Dec 15/24. Thanks to those CINP members who provided scientific updates that were shown there. GH also attended the virtual SAPES Large Projects Day as an observer on Sunday Feb 23/25. This meeting is now entirely in-camera, upon request of the international SAPES members.

- Every spring, the CINP Executive Director is asked to suggest new members of the NSERC Subatomic Physics Evaluation Section (SAPES), to replace the specific expertise of outgoing members. **If you have suggestions for replacements of the following 5 members for the 2025-26 competition, please respond to GH ASAP.**

Retiring SAPES Members:
Roxanne Guenette, University of Manchester, Exp Neutrino & Particle Physics
Niki Saoulidou, University of Athens, Exp High Energy Physics
Michael Vetterli, SFU, Exp High Energy Physics
Alexandros Gezerlis, Guelph, Theoretical Nuclear Physics
Giulia Ricciardi, University of Naples, Theoretical Particle Physics

Looking to Recruit SAPES Expertise in:
- Exp Neutrino Particle Physics
- Theoretical Particle Physics (specifically Beyond the Standard Model)
- Theoretical Nuclear Astrophysics

- CINP is a community representative to the Advisory Committee on TRIUMF (ACOT). However, things seem to be flux with ACOT, as there are some changes to committee charge and meeting format underway. CINP was not invited at all to the fall 2024 meeting, and GH only had a small virtual participation in the April 2025 meeting. Our understanding (from the ACOT Secretariat) is we should in the future expect one in-person invitation

per year, the next one being in Spring 2026.

- GH also represents CINP on the Pan-Canadian MRS Coordination Board. A decision was made to have CINP and IPP Executive Directors join as co-applicants on the Alberta, Montreal and Winnipeg MRS grant applications in the 2025 competition, to demonstrate their openness to supporting national projects that are not part of the hosting university. Despite our show of support, the MRS facilities received significant cuts to their NSERC support, with the Winnipeg facility expected to be wound down this year. For more information on the available MRS resources, please visit the CINP website https://cinp.ca/subatomic-physics-major-resources-support-facilities

- Nigel Smith, TRIUMF Director, has instituted a regular set of meetings between senior TRIUMF leadership and the Directors of CINP, IPP and McDonald Institute. Meetings are held every 3-4 months.

10. CINP posting of Job Opportunities

We regularly post Nuclear Physics Job Opportunities on the CINP website, at:
https://cinp.ca/announcements

- Researchers looking for positions are encouraged to regularly consult this page. Please let GH know if you are recruiting for a position and want your announcement to be distributed.

11. CINP Graduate Fellowship (GF)

2025 was the 5th year of the Graduate Fellowship program. The GF application deadline of March 24 was sufficiently close to the NSERC notice date that adjustments in the number of awards could be made prior to the end of application evaluations. Each GF is valued at $15,000. The awardee's supervisor or home institution must agree to supplement the scholarship from institutional or research funds to a value of not less than $35,000. The student cannot concurrently hold any other major full-time scholarship or fellowship (defined as $15,000 or higher).

In addition to academic and scientific criteria, the Fellowship award has an EDI component, where applicants had to write a 1 page description of what role a PhD student and CINP Graduate Fellow can play in promoting and advancing EDI in our community.

The applications were evaluated by a committee: Dr. Russell Mammei, Chair (Winnipeg, CINP board member), Dr. Andrea Capra (TRIUMF), and Dr. Ruben Sandapen (Acadia, Education SWG chair). 17 applications were received, but **due to the budget situation, only the top 2 could be awarded (11% success rate). This was an incredibly tough competition!**

CINP is pleased to announce the two recipients of the 2025 Fellowships:

Akshaya Vijay (Manitoba). The Electron-Ion Collider (EIC), to be built at Brookhaven National Laboratory, will collide electrons with protons and nuclei in a wide range of energies, achieving luminosities up to 1,000 times higher than previous unpolarized colliders to explore proton mass, spin, and dense gluon systems. The EIC will feature a single, general-purpose ePIC detector, which requires innovative electromagnetic and hadronic calorimeter designs covering the backward, central, and forward regions. My research focuses on the barrel electromagnetic calorimeter of the ePIC detector, also known as the Barrel Imaging Calorimeter (BIC). The BIC is a hybrid detector that combines lead with scintillating fibers, similar to the design used in the GlueX experiment, and AstroPix silicon sensors for high-resolution imaging. My work involves

developing and optimizing the BIC through hardware prototyping, clustering algorithms, and physics simulations. This includes fabricating lead/scintillating fiber (Pb/ScFi) matrices and testing readout technologies such as photomultiplier tubes (PMTs) and silicon photomultipliers (SiPMs). Akshaya is supervised by Wouter Deconinck (Manitoba).

Frank Wu (SFU). Frank has been working closely with his collaborators to study the electromagnetic transition rates in the semi-magic ^{118,120}Sn. Excited states in the even ASn were populated using thermal neutron capture on A-1Sn at ILL in Grenoble, France. Gamma-ray cascades from the capture state were detected with the FIPPS HPGe array coupled to $LaBr_3$ detectors. From this data, Frank is extracting the lifetimes of excited states in ^{118,120}Sn using the fast-timing technique. Results of his work will shed light on the collectivity and degree of configuration mixing of the excited states in these isotopes. Frank works under the supervision of Corina Andreoiu (SFU).

CINP is very pleased by the strong response to the Graduate Fellowship program, and we thank the many students who applied for the Fellowship, the many people who wrote letters, and the Selection Committee for their work.

Some measures to reduce the workload on the selection committee by reducing the spread in applicant experience and number of applications will be raised for discussion at the Individual members AGM at the CAP Congress on June 12. **If you are attending the Congress, we would appreciate your input then!**

After completion of the Graduate Fellowship, the recipient is asked to provide a short report for the CINP Newsletter summarizing the result of their research. We are pleased to present the articles from the 2024 Graduate Fellowship recipients.

12. Investigating Shape Coexistence and Collectivity in ^{96}Zr via "Safe" and "Unsafe" Coulomb Excitation

Zarin Tasnim Ahmed (Guelph)
PhD Supervisors: Paul Garrett (Guelph) & Magda Zielińska (CEA Saclay)

The Zr (Z=40) isotopes exhibit a striking evolution in nuclear structure near A~100, with a sharp transition in shape occurring near N=60. In this region, ground-state configurations of even-even Sr and Zr isotopes, transition abruptly from spherical to deformed shapes, indicative of a quantum phase transition (QPT).

Among the Zr nuclei close to N=60, ^{96}Zr was the first to be investigated in detail with respect to its collective properties. In 2016, inelastic electron scattering measurements provided evidence for two distinct low-lying structures built on the ground state and the 0_2^+ state, with the $B(E2; 2_1^+ \rightarrow 0_1^+)$ value lower by an order of magnitude than $B(E2; 2_2^+ \rightarrow 0_2^+)$ [1]. In the same year, Monte-Carlo Shell Model (MCSM) calculations by Togashi et al. [2] successfully reproduced these findings and attributed the underlying mechanism to type-II shell evolution, driven by proton-neutron interactions across major shells. This approach suggests that the mixing between the two coexisting structures is very small,

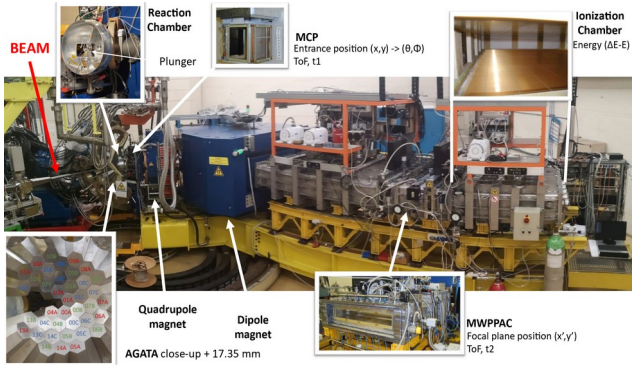


Figure 12-1: Experimental setup for combined lifetime and transition probability measurements in ^{96}Zr using AGATA and PRISMA at LNL.

which is confirmed by the experimental data for spin-0 and spin-2 states, but at odds with the branching ratios in the decay of the presumed spin-4 band members [5]. Moreover, the $B(E3; 3_1^- \rightarrow 0_1^+)$ strength in ^{96}Zr is among the largest known across the nuclear chart [3,4] and has been subject of continued debate, emphasizing the need for an independent verification of the 3_1^- state's lifetime.

To extend and refine the spectroscopic data relevant to these open questions, a multi-step Coulomb-excitation experiment was conducted in May 2024, forming the foundation of my PhD research. The start of my CINP Graduate Fellowship aligned with this exciting opportunity to contribute to the "unsafe" Coulomb excitation study of ^{96}Zr at the INFN–Legnaro National Laboratories (INFN-LNL), in Italy, as part of a campaign with the gamma-ray tracking array AGATA.

In the experiment, a 528-MeV ^{96}Zr beam was accelerated using the Tandem and ALPI systems at LNL and was directed onto a 1mg/cm^2 ^{92}Mo target. Both "safe" (governed purely by the electromagnetic interaction) and "unsafe" (governed by both Coulomb and nuclear potentials) Coulomb-excitation regimes were leveraged to populate a range of excited states to measure the reaction cross-sections.

In preparation, I coordinated the procurement and shipment of enriched ^{96}Zr material. During beamtime, I worked closely with the local team to support the setup, optimize the data acquisition chain to ensure efficient use available beam on target time (~68 hours) and average intensity (2.6 enA). This hands-on experience with the complex experimental setup (Fig. 12-1) provided valuable experimental training and high-quality data that I later brought back to my home institute in Canada for further analysis.

The setup integrated the AGATA gamma-ray tracking array for detecting de-excitation gamma rays, the PRISMA magnetic spectrometer for identifying scattered ^{96}Zr and ^{92}Mo ions, and a differential plunger device – comprising the ^{92}Mo target and a ^{28}Mg degrader – to measure nuclear lifetimes via the Recoil Distance Doppler-Shift (RDDS) method. Online analysis during the experiment showed clear population of multiple excited states.

Over the past year, my CINP Graduate Fellowship work has focused on a detailed, component-wise analysis of the AGATA-PRISMA dataset. For this experiment, 32 segmented germanium crystals of the AGATA array were operational, each containing 36 segments, resulting in a total of 1152 segment channels across the array. I performed individual calibrations and applied correction procedures to data from each segment to account for neutron damage sustained in previous experiments. I am currently working on the data from the PRISMA magnetic spectrometer – consisting of a dipole and quadrupole magnet and three detector systems (the Micro-Channel Plate (MCP) entrance detector, the Multi-Wire Parallel Plate Avalanche Counter (MWPPAC) and the Ionization Chamber (IC). My focus is on identifying recoiling ions by determining their velocity, charge state, mass, and atomic number – critical steps for clean event selection and background reduction. This includes calibrating each detector, setting appropriate detection thresholds, performing Z identification using the $\Delta E - E$ technique, and aligning Time-of-Flight signals. Next, I will complete the reconstruction of ion trajectories within the PRISMA spectrometer to establish event-by-event correlations with AGATA, enabling accurate Doppler correction and selection of the desired reaction channel.

These efforts lay the groundwork for my PhD analysis of the measured cross sections to extract the electromagnetic transition probabilities in ^{96}Zr. The more conventional "safe" part of the Coulomb excitation data will serve to extract the *B(E2)* and *B(E3)* values. I am looking forward to analysing the "unsafe" part of the data to explore the influence of Coulomb-nuclear interference on excitation cross sections of higher-lying states. If an enhancement is found consistent with a previous similar study of ^{106}Cd [6], it could be extremely useful in planning future radioactive beam experiments, where this effect could be used to compensate for low RIB intensities.

[1] S. Kremer et al, Phys. Rev. Lett. 117 172503 (2016)
[2] T. Togashi et al, Phys. Rev. Lett. 117, 172502 (2016)
[3] T. Kibédi and R.H. Spear, At. Data Nucl. Data Tables 80, 35 (2002)
[4] Ł. Iskra et al, Phys. Lett. B 788, 396 (2019)
[5] J. Wiśniewski et al, Phys Rev C 108, 024302 (2023)
[6] D. Kalaydjeva et al, in preparation for Eur. Phys. J. A

13. Pion Electroproduction and Generalized Parton Distribution (GPD) Extraction

Nathan Heinrich (Regina)
PhD Supervisor: Garth Huber (Regina)

One of the central problems of modern physics is our understanding of the building blocks of the nucleus: protons and neutrons. Understanding nuclei is one of the central goals of the field of hadronic physics. One of the major problems in this field has been the *spin crisis*, in which it is unclear how the spin of the proton emerges from its constituent parts. The simple solution is to assume that the spin is evenly divided between the valence quarks, but the failure of the Ellis-Jaffe sum rule [1] has shown this not to be the case. In order to solve this issue, a new kind of object had to be developed called Generalized Parton Distributions (GPDs) which could encode the total angular momentum of the quarks and gluons inside the proton [2].

A factorization theorem has been proven for longitudinally polarized photons in meson electroproduction [3]. It states that for reactions with sufficiently large Q^2, at fixed x, and fixed momentum transfer to the nucleon (−t), the amplitude can be expressed in terms of the following: a hard process, representing the interaction of the virtual photon probe with a quark in the initial hadron; and a distribution amplitude describing the final state of the meson; and GPDs, which encodes the non perturbative physics inside the nucleon. This is known as the 'handbag' diagram (see Fig. 13-1). While the factorization theorem is expected to be valid at $Q^2 \geq 10$ GeV^2, various other experimental studies assume its applicability at more moderate Q^2, even though this assumption is not yet experimentally verified. This verification is the primary purpose of this study. GPD extractions can only be performed if the factorization regime has been reached. The most important condition of reaching this regime is $\sigma_T \ll \sigma_L$, where σ_T and σ_L refer to the contributions from the longitudinally and transversely polarized virtual photons, as can be seen in the Rosenbluth formula

$$2\pi\frac{d^2\sigma}{dt\,d\phi} = \epsilon\frac{d\sigma_L}{dt} + \frac{d\sigma_T}{dt} + \sqrt{2\epsilon(\epsilon+1)}\frac{d\sigma_{LT}}{dt}\cos\phi + \epsilon\frac{d\sigma_{TT}}{dt}\cos 2\phi$$

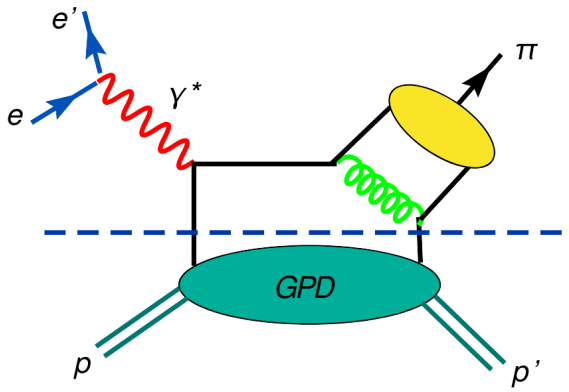


Figure 13-1: The "handbag diagram" of Deep Exclusive pion electroproduction. The interaction between a parton and the hard probe above the dashed line factorizes from the soft response of the nucleon to the probing interaction. This soft response, where a parton with momentum x is replaced with a new parton of momentum x', is encoded in Generalized Parton Distributions (GPDs).

The Pion-LT experiment at Jefferson Lab Hall C (E12-19-006) [4] is the subject of my thesis, and it seeks to produce measurements of the longitudinal (σ_L) and transverse (σ_T) cross-sections in a previously inaccessible region of four momentum transfer (Q^2). One of the central goals of this experiment is to test the viability of Generalized Parton Distribution (GPD) extraction at the kinematics accessible to experiments at Jefferson Lab. This experiment will extract these cross sections for the reaction $p(e, e'\pi^+)n$ using a technique called Rosenbluth separation. Scattered electrons are detected in the High Momentum Spectrometer (HMS), while pions are detected in the Super High Momentum Spectrometer (SHMS).

Over the course of the last year a great deal of progress has been made to understand rate dependent corrections. Understanding these corrections is very import to ensure that the data are accurate and reliable. These studies are soon to be completed, with corrections applied to remove unphysical rate dependence from trigger effects, beam heating of the liquid hydrogen target, and detector efficiencies. With the conclusion of these studies work is beginning on the extraction of Rosenbluth separated cross-sections. This work should be completed within the next year, with publications expected after that.

[1] J. Ellis and R. Jaffe, Phys. Rev. D 9, 1444 (1974).
[2] X. Ji, Phys. Rev. Lett. 78, 610 (1997).
[3] J. C. Collins, L. Frankfurt, and M. Strikman, Phys. Rev. D 56, 2982–3006 (1997).
[4] G.M. Huber, T. Horn, D. Gaskell, et al., JLab PAC 19 (2019).

14. Congratulations to Guy Leckenby for the GSI Exotic Nuclei Community Young Scientist Award 2025

(submitted by Iris Dillmann ,TRIUMF)

At the 25th anniversary of the GSI Exotic Nuclei Community (GENCO) meeting in February 2025 former TRIUMF/UBC PhD student Guy Leckenby has been awarded the Young Scientist Award for "the precise determination of the bound-state beta decay half-life of fully-ionized 205Tl and its application to standing open questions about element abundances in the solar system and the solar neutrino flux". The GENCO Young Scientist Award is presented annually since 2000 to outstanding young researchers working in the field of experimental or theoretical nuclear physics or chemistry. The winners are selected by an international jury. The prize is endowed with 1000 euros.

Figure 14-1: GENCO Young Scientist Prize Winner Guy Leckenby (center) with the GENCO President Christoph Scheidenberger and Vice-President Zsolt Podolyak

Guy started his graduate studies at UBC and TRIUMF in 2019. He defended his PhD thesis (Exotic Decay Measurements at the Experimental Storage Ring for Neutron Capture Processes) in November 2024. The focus of Guy's thesis work was devoted to the determination of the bound-state beta-decay half-life of the fully-ionized Thallium isotope 205Tl which is stable as neutral atom but becomes radioactive if all bound electrons are removed (charge state 81^{+}). The corresponding Nature publication (G. Leckenby et al., Nature 635, 321 (2024)) discusses the origin of the decay daughter ^{205}Pb the Solar system.

GSI Press Release:
https://www.gsi.de/en/start/news/details/2025/04/02/genco-2025

TRIUMF Press Release:
https://triumf.ca/2025/04/28/guy-leckenby-has-been-awarded-the-gsi-exotic-nuclei-community-genco-young-scientist-award-2025/

15. TRISEP 2025

(submitted by David Morrissey, TRIUMF)

The 2025 Tri-Institute Summer School on Elementary Particles (TRISEP) will be held from June 16-27, 2025 and hosted by TRIUMF. TRISEP is an international summer school on particle physics organized jointly by the Perimeter Institute for Theoretical Physics, SNOLAB, Canada's deep underground physics lab, and TRIUMF, Canada's particle accelerator centre. Further support is provided by the Institute for Particle Physics. Information about previous editions of TRISEP is available at trisep.ca.

This interactive school will feature lectures by leading experts in the field of particle physics and is designed with ample time for group work, problem solving, and discussions with the speakers. TRISEP is intended for graduate students of all levels who have taken an advanced quantum mechanics class and an introductory particle physics class.

Registration is open but will close on May 31!
https://indico.triumf.ca/event/613/

16. Grad classes offered by TRIUMF

TRIUMF periodically offers a few graduate-level courses, usually in the fall and winter terms, which could be of interest to your students. The courses are run online through UBC or UVic. Typically students would register at their local department in a 'directed studies' or 'special topics' course, though students in western Canada could take advantage of the Western Dean's Agreement to transfer course credit directly.

Students are asked to contact the lecturer directly is they are interesting in taking, or want more information about, the course.

UBC PHYS 505 Nuclear Physics

PHYS 505 Nuclear Physics at UBC is usually offered in odd-number years, but Barry Davids and John Behr plan to offer it Jan-April 2026 as well, depending on interest. Typically 50-70% of the students are non-UBC. Advisors and students should indicate possible interest to behr@triumf.ca

Nucleons and their structure, hadrons and isospin, two-nucleon systems, the *NN* interaction; bulk properties of nuclei, nuclear excitations and radioactivity, nuclear models; strong and electromagnetic decay, symmetries and weak interaction; nuclear reactions, nuclear astrophysics.

Prerequisites: PHYS 500 Quantum Mechanics I or equivalent (one semester of grad QM)

More details at:
https://phas.ubc.ca/~behr/phys505/

Contacts: John Behr <behr@triumf.ca>, Barry Davids <davids@triumf.ca>

UBC PHYS 528 Elementary Particle Physics

(to be offered in January if there is sufficient demand)

https://particletheory.triumf.ca/PHYS528/

This course will cover the underlying theory of the Standard Model (SM) of particle physics. Starting from Feynman diagrams and quantum electrodynamics (QED), we will build up the other elements of the SM including the strong and weak forces and the Higgs mechanism. We will also connect the SM to experimental observations at high energy colliders and beyond.

Prerequisite: Familiarity with QED at the level of tree-level Feynman rules.

Contact: Dr. David Morrissey <dmorri@triumf.ca>

UBC PHYS 560 / UVic PHYS 522 Physics and Engineering of Particle Accelerators
(to be offered in January if there is sufficient demand)

The course will provide an introduction to the physics and technology of particle accelerators concentrating particularly on proton and ion accelerator technology. The course will include a survey of existing accelerator types and an introduction to transverse and longitudinal beam optics. The course will also include an introduction to the physics and technology of ion sources, will give an overview of radioactive ion beam production, of accelerator radio-frequency principles and more detailed aspects of room temperature and superconducting linear accelerators, as well as high energy circular machines. The course should appeal to students of Accelerator Physics, as well as to students of Experimental Nuclear and Particle Physics and other students interested in Particle Accelerators.

Pre-requisites: Classical Mechanics, Classical Electro-dynamics

Contact: Dr. Oliver Kester <okester@triumf.ca> or Dr. Bob Laxdal <lax@triumf.ca>

17. TRIUMF Science Week
(submitted by Andrea Capra, TRIUMF)

Registration is now open!
https://indico.triumf.ca/event/616/page/458-registration

TRIUMF's 2025 Science Week which will take place July 28 – 31. It is a yearly event that brings together the users of the laboratory, allowing the community to learn about recent highlights from the TRIUMF science program. It is also a venue to seek community input and initiate inter-disciplinary discussions regarding the TRIUMF scientific achievements and goals.

We are still fine-tuning the speaker schedules, but an outline of the program can be found at https://indico.triumf.ca/event/616/timetable/#20250728.detailed

- On Monday morning the TRIUMF Senior Management will provide an update about the 5-Year Plan Implementation, the Long Shutdown 2026 and the impact on the on-site facilities. We also will have a session dedicated to the planning towards the new 20-Year Vision plan.
- From Monday afternoon throughout Tuesday there will be 18 scientific highlight presentations from the TRIUMF departments and divisions.
- Monday evening we will host a reception and the student poster session with the first part of the poster competition.
- On Wednesday morning the TRIUMF User Group AGM will take place.
- Wednesday after lunch the student poster prize presentations will take place and the winners be crowned.
- We will celebrate the 2025 International Year of Quantum Science and Technology with a session about Quantum Science at TRIUMF.
- Thursday, July 31, will be a full day dedicated to an Early Career Workshop for students and postdocs (register online).

To register yourself and your poster for the student poster competition,
https://indico.triumf.ca/event/616/page/391-poster-session

TSW2025 LOC Core Team:
Andrea Capra
Iris Dillmann
Marcello Pavan
Pascal Reiter
Christian Diget

18. CINP Board of Directors

The CINP Institutional Members had their annual meeting via Zoom on May 14. One of the agenda items was to elect two Board members, who are listed below. Their assigned duties will be selected at their next meeting on June 12.

Name	Institution	Email	Term Ends
Thomas Brunner	McGill	thomas.brunner @ mcgill.ca	June, 2028
Liliana Caballero	Guelph	ocaballe @ uoguelph.ca	June, 2026
Gwen Grinyer	Regina	gwen.grinyer @ uregina.ca	June, 2027
Svetlana Barkanova	Memorial	sbarkanova @ mun.ca	June, 2028
Russ Mammei	Winnipeg	r.mammei @ uwinnipeg.ca	June, 2026
Chris Ruiz	TRIUMF	ruiz @ triumf.ca	June, 2027

CINP Executive Director:

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

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CINP Executive Director
c/o University of Regina
306-585-4240
huberg@cinp.ca

CINP Treasurer:

Greg Hackman
TRIUMF
treasurer@cinp.ca

CINP Institutional Members:

Memorial University of Newfoundland
Saint Mary's University
Mt. Allison University
McGill University
University of Guelph
University of Manitoba
University of Winnipeg
University of Regina
University of Calgary
University of Northern British Columbia
Simon Fraser University
TRIUMF

Scientific Working Group Chairs:

Fundamental Symmetries:
Jeff Martin (Winnipeg)
Hadronic Physics/QCD:
Svetlana Barkanova (Memorial)
Nuclear Astrophysics: Nicole Vassh (TRIUMF)
Nuclear Education and Training:
Ruben Sandapen (Acadia)
Nuclear Structure: Paul Garrett (Guelph)
Nuclear Theory: Alexandros Gezerlis (Guelph)

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