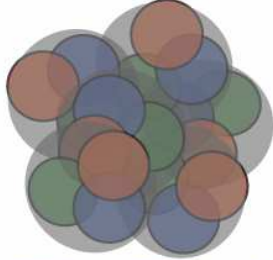


C I N P



I C P N

**Canadian Institute of
Nuclear Physics**

**Institut canadien de
physique nucléaire**

2022 Individual Members AGM

June 9, 2022

McMaster University, Hamilton, ON

Agenda

1. **Executive Director's report**
2. **Financial Report**
 - **Prepared by Greg Hackman**
3. **Discussion Items**
 - **Nuclear Simulation package by Luisa Vargas Suarez & Jason Donev (Calgary)**
4. **Comments and Suggestions from Membership**
5. **Adjourn**

What is the CINP?

- The 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.
 - Federally incorporated under the Canada Not-for-profit Corporations Act.
- Represents researchers covering all aspects of experimental and theoretical nuclear physics. Co-ordinates planning on a national scale and exchanges information within and between the various sub-fields of nuclear physics.
- Leads initiatives to strengthen the level and quality of nuclear physics research in Canada, including fellowships, undergraduate research scholarships, student travel awards, and targeted conference support.

CINP Membership Classes



INDIVIDUAL MEMBERS

- Open to any resident of Canada who has sufficient training and competence in the discipline of Nuclear Physics to enable the individual to play a significant role in the activities of the Institute.
- No dues or assessments.

INSTITUTIONAL MEMBERS

- Universities and laboratories which are actively involved in academic research in Nuclear Physics.
- Meet annually to elect the Directors of the Institute.
- Must pay annual dues as levied by the Board of Directors.

ASSOCIATE MEMBERS

- Industrial corporations, charitable organizations, etc. with staff members who have expertise in Nuclear Physics.
- Recognition will be based on annual donations.
- Qualified staff members permitted to attend Institute activities.


CINP Governance

Institutional Members
McGill University
Memorial University of NL
Mount Allison University
Saint Mary's University
Simon Fraser University
TRIUMF
University of Guelph
University of Manitoba
University of Northern BC
University of Regina
University of Winnipeg

Pay
Annual
Dues
and
Elect
Board

Board of Directors
Rituparna Kanungo <i>President</i>
Thomas Brunner
Michael Gericke
Gwen Grinyer
Jeff Martin
Chris Ruiz

Executive Director
Garth Huber



Treasurer
Greg Hackman

Our thanks to:

- **Thank you to Sangyong Jeon (McGill) who is stepping down from the CINP Board**
 - Two terms as Board member (20xx)
 - Sangyong is also the recipient of the 2021 CAP/TRIUMF Vogt Medal for Excellence in Subatomic Physics
- Please welcome incoming Board member Thomas Brunner (McGill), who was elected at the CINP Institutional Members meeting on May 17
- **The Institutional Members are the owners of the CINP, and have a significant say in CINP policy through the Board. If your university is not yet listed, please consider joining us!**

CINP Individual Membership

- **Significant growth in membership in last year!**
 - Net gain of 25 members since last year
 - 26 new Associate Members offset by net loss of 3 due to finding permanent positions outside Canada or leaving field
 - 2 new Faculty Members

New Faculty Members:

M. Boland (Sask) N. Vassh (TRIUMF)

New Associate Members:

T. Zidar (Guelph)	D. Prajapatl (Saint Mary's)
L. Preet (Regina)	M. Singh (Saint Mary's)
S. Oresic (Regina)	A. Mahmoud (Regina)
N. Nikhil (Saint Mary's)	M. Drissi (TRIUMF)
J. Bohorquez (Guelph)	G. Singh (Saint Mary's)
M Gennari (TRIUMF)	M. Cvitan (McMaster)
M. Rocchini (Guelph)	M Martin (SFU)
B. Kootte (Manitoba)	A. Mollaebrahimi (TRIUMF)
F. Wu (SFU)	C. Natzke (TRIUMF)
W. Dissanayake (Guelph)	S. Buck (Guelph)
J. Trujillo (Calgary)	G. Smith (UBC)
G. Palkanoglou (Guelph)	P. Woosaree (Calgary)
A. Powell (Calgary)	T. Hucko (Manitoba)

	Now	1 Year Ago	Change
As of May 1, 2022			
Faculty Level	86	84	+2
Associate	84	61	+23
Experiment Major Interest	127	108	+19
Theory Major Interest	41	35	+6

Scientific Working Groups

Working Group	Members	Chair
Nuclear Astrophysics	72	Iris Dillmann (TRIUMF)
Nuclear Structure	74	Adam Garnsworthy (TRIUMF)
Fundamental Symmetries	73	Gerald Gwinner (Manitoba)
Hadrons/QCD	54	Svetlana Barkanova (Memorial)
Nuclear Theory	27	Alex Gezerlis (Guelph)
Nuclear Physics Education & Training	50	Juliette Mammei (Manitoba)

- **New Nuclear Theory SWG**

- Proposed during 2020 CINP LRP White Paper writing
- Created by CINP Board in 2021
- Off to a good start, with 27 individual members so far
- **Alexandros Gezerlis** (Guelph) elected as Chair

CINP 2021–22 Accomplishments

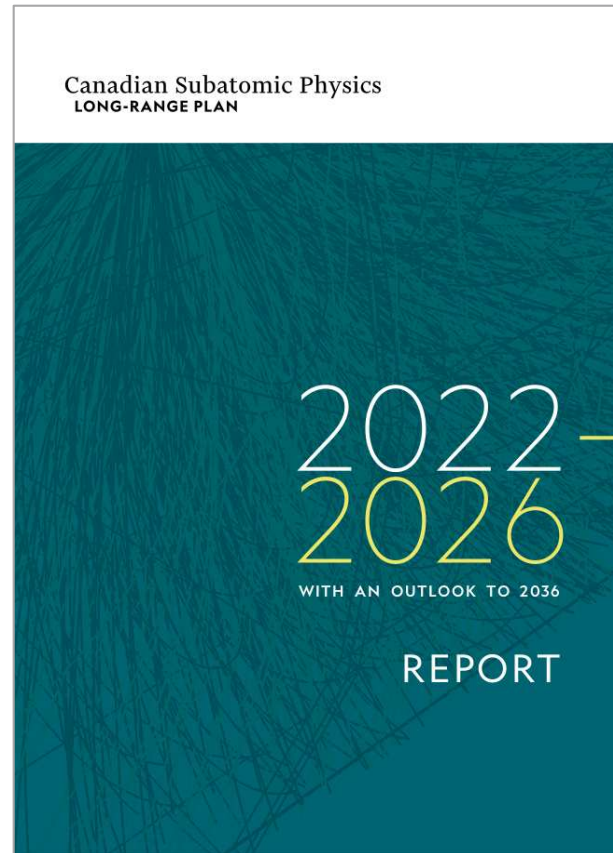


• Nuclear Physics Representation

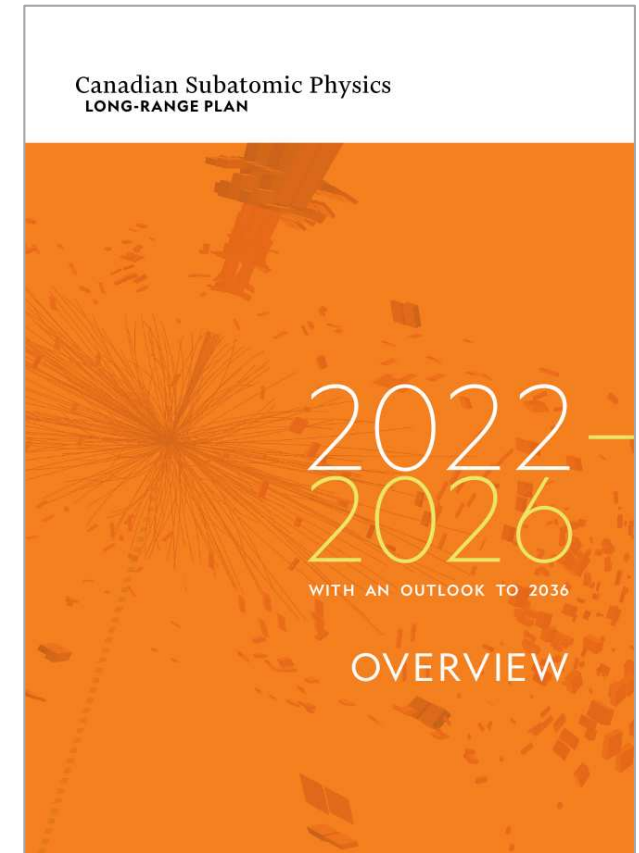
- The CINP is vital in giving the nuclear physics research community a coherent and strong voice
- CINP presentation at SAPES Fall Orientation Session on Dec 17, and observer at Large Project Day
 - Unlike prior years, where some external representation was allowed, Large Project Day is now entirely *in-camera*
- NP Community Representative at Advisory Committee on TRIUMF (ACOT), spring and fall annually
 - October 2022 meeting is expected to be in-person
- Nigel Smith (TRIUMF Dir) has instituted a regular set of meetings with ED of CINP, IPP, McDonald Inst
- Pan-Canadian MRS Coordination Board
- Formal observer to NuPECC (Nuclear Physics European Collaboration Committee)
 - Rituparna Kanungo made an in-person presentation at their most recent meeting in May

2022–26 Long Range Plan

- CINP is one of 3 commissioning bodies, along with IPP and NSERC
- LRPC has completed their work. Produced two reports, in both French and English
- All documents available from <https://cinp.ca>
- *Please let us know how you use them*



136 page detailed report for scientists and funding agencies



40 page overview, intended for outreach or lobbying (such as discussions with your senior administration)

CINP 2021–22 Accomplishments



• Community Outreach

- CINP facilitates new connections and allows the disparate Canadian nuclear physics community to develop a common identity
- CINP website <http://cinp.ca/> content added regularly
- 2 Newsletters annually



Canadian Institute of Nuclear Physics
Institut canadien de physique nucléaire

Newsletter #13, November 2018

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 (2018-19)

The CINP Institutional Members had their annual meeting via teleconference on May 4, 2018. One of the agenda items 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
Michael Gericke	University of Manitoba		mgericke@physics.umanitoba.ca	June, 2020
GF Grinyer	University of Regina		gf.grinyer@uregina.ca	June, 2021
Sangyong Jeon	McGill University	Secretary	jeon@physics.mcgill.ca	June, 2019
Ritupama Kanungo	Saint Mary's University	President	ritu@triumf.ca	June, 2019

2. Undergraduate Student Conference Support

The CINP awarded four \$500 travel grants to support undergraduate students giving talks on nuclear physics related projects at the 2018 Canadian Undergraduate Physics Conference (CUPC) held at the University of Alberta in Edmonton, AB on August 15-18, 2018. The applications were evaluated by: Drs. Chris Ruiz (TRIUMF) and Garth Huber (Regina/CINP).

Student	Supervisor	CUPC Talk Title
Antoine Belley (McGill)	Thomas Brunner (McGill)	Development of an electroluminescent light source to characterize SiPMs for nEXO
Dixin Chen	Thomas Brunner	Performing experiments on a laser ablation ion

Canadian Institute of Nuclear Physics
Institut Canadien de Physique Nucléaire

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Information and News

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- Conference Support
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Scientific Working Groups

- Overview
- Nuclear Astrophysics
- Nuclear Structure
- Fundamental Symmetries
- Hadronic Physics/QCD
- Education and Training

Important Links

- Subatomic Physics Long Range Plan
- NSERC News
- SAPES Chair Reports (2010-)
- GSC-19 Chair Reports (2001-09)
- IUPAP Working Group WG.9

GRIFFIN with DESCANT and SCEPTAR

The Canadian Institute of Nuclear Physics 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.

CINP 2021–22 Accomplishments



- **CINP Undergraduate Research Scholarships (URS)**

- A supervisor can nominate only their best student for the award.
- \$5k student stipend which must be matched by supervisor to at least \$9k
- \$1300 travel supplement available if the supervisor intends to send the student to a laboratory or to work with a second collaborator for an extended period

- **CINP URS is complementary to the NSERC USRA in several key aspects:**

- 1) Gifted international students studying in Canada are eligible to apply for the CINP URS, but not the NSERC USRA
- 2) An important element of the URS is the optional Travel Award, which allows the supervisor to send student to a lab or work with second collaborator for an extended period. This can have a significant impact on the quality of the research experience for some undergrads. The NSERC USRA has no such component.

CINP 2021–22 Accomplishments



2022 CINP Undergraduate Research Scholarships

Student	Supervisor	Project Title
Minya Bai (McGill)	Thomas Brunner (McGill)	Characterization of an in-gas laser-ablation ion source for nEXO's Ba-tagging developments
Vincent Bruening (Mt. Allison)	David Hornidge (Mt. Allison)	Commissioning of the CATS large NaI detector
Quaid Hawkins (Guelph)	Khashayar Ghandi (Guelph)	Cherenkov radiation in a plasma
August Mendelsohn (Manitoba)	Russ Mammei (Winnipeg)	Nab silicon characterization with 30 keV protons
Dhruval Shah (Regina)	Gwen Grinyer (Regina)	Beta-delayed charged particle spectroscopy of Si-22,23
Abbygale Swadling (Calgary)	Timothy Friesen (Calgary)	Towards the first direct measurement of the Lamb shift in anti-hydrogen

- **8 applications were received**
- **Selection Committee: Juliette Mammei (Manitoba), Chris Ruiz (TRIUMF), GH (Exec Dir)**

CINP 2021–22 Accomplishments



• CINP Graduate Fellowship

- Program began in 2021, expanded in 2022
- Two \$12,000 fellowships to PhD student of high merit
- In addition to academic and scientific criteria, the application has an EDI component, where applicants wrote a 1 page description of what role a PhD student and Graduate Fellow can play in promoting and advancing EDI in our community
- 10 applications were received for fellowship, competition very tight
- **Selection Committee:** Gwen Grinyer (Regina), Gerald Gwinner (Manitoba), Jason Holt (TRIUMF), David Hornidge (Mt Allison)

Fatemeh Gorgannejad (Manitoba)

Supervisor: Wouter Deconinck

She has been designing, developing, constructing the pion detector system for the MOLLER experiment funded by CFI and NSERC. The pion detector provides access to the physics of pion production. In addition to background corrections for the Fundamental Symmetries results of MOLLER, the pion results are of interest to Hadrons/QCD field

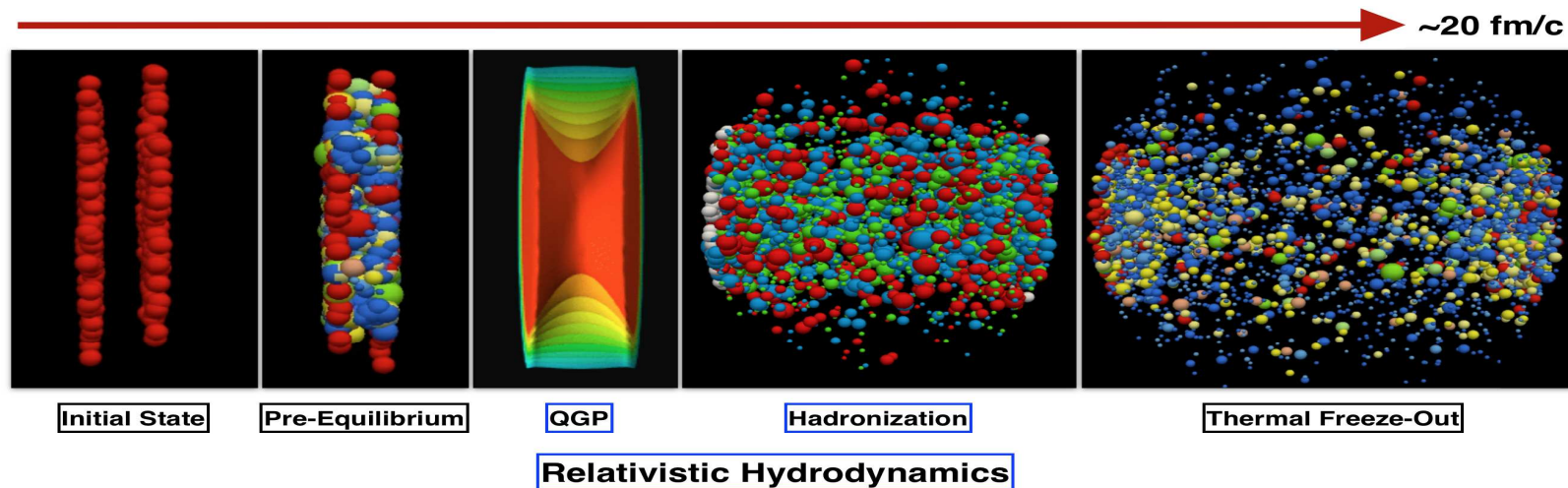
Adam Powell (Calgary)

Supervisor: Timothy Friesen

He joined U.Calgary in 2019 and has spent most of his time at CERN working on the ALPHA Collaboration. His anti-hydrogen research is focused on microwave spectroscopy and gravitational free fall measurements, as well as characterizing the magnetic fields inside the experiment using electron plasmas.

2021 Graduate Fellowship Report

- **Jessica Churchill (McGill)** *Supervisor: Charles Gale*
- **Theoretical Investigations of the Quark-Gluon Plasma**
- One of the goals of colliding nuclei at relativistic energies is to create and characterize the quark–gluon plasma, an exotic state of matter existing a few μs after the Big Bang
- The electromagnetic signal from the pre–equilibrium phase was recently quantified successfully by Churchill et al., and the enhancement of the dilepton yield from NLO terms in the hydrodynamic phase has been calculated for the first time



- For more details, please see the article in May CINP Newsletter

CINP NSERC Expenditures

– Prepared by Greg Hackman



FY21 (preliminary)	
FY20 Carry Forward	67,980
FY21 Installment	75,000
Late FY20 Expenses	5,000
Representation Travel	0
Conference Sponsorship	0
Undergrad Scholarships	30,000
URS Travel Supplement	0
Graduate Fellowships	12,000
Junior Scientist Travel	2,000
Student Conf Support	0
Recruitment	1,000
Misc	59
FY21 Expenses	50,059
FY21 Balance	92,921

Pandemic surplus is being re-directed to increased Graduate Fellowships

FY22 (budgeted)	
FY22 Installment	75,000
Late FY21 Expenses	1,220
Representation Travel	
ACOT (1 trip)	1,450
Other domestic	1,450
International	5,300
Conference Sponsorship	7,000
Undergrad Scholarships	30,000
URS Travel Supplement	3,900
Graduate Fellowships	24,000
Junior Scientist Travel	7,000
Student Conf Support	7,800
Recruitment	1,750
Misc	1,470
FY22 Projected Expenses	92,340
FY22 Projected Balance	75,581

CINP Private Account

– Prepared by Greg Hackman



FY21 (preliminary)	
FY20 Carry forward	\$26,990
FY21 Dues assessed	\$22,000
Receivables (dues owed)	\$1,500
Executive Director	\$24,000
Finance Expenses	
Audit	\$3,330
Bank	\$0
Industry Canada	\$0
Total FY21 Expenses	\$27,330
Year End Balance	\$23,660

FY22 (budgeted)	
FY22 Dues assessed	\$24,000
Executive Director	\$24,000
Finance Expenses	
Audit	\$3,330
Bank	\$100
Industry Canada	\$20
Total FY22 Expenses	\$27,665

- CPA: Dudley & Company LLP, Regina

Agenda Items

3. Discussion Items

- Nuclear Simulation package by Luisa Vargas Suarez & Jason Donev (Calgary)

4. Comments & Suggestions from Membership

5. Adjourn

Build a Nucleus Simulation

- To encourage non-specialists to gain familiarity with the Chart of the Nuclides, the Energy Education Team at U.Calgary designed this simulation with the U.Colorado PhET team
- It introduces necessary concepts to understand the chart through its connection with the periodic table

Build a Nucleus Simulation: Decay Screen

The screenshot displays the 'Decay Screen' of the 'Build a Nucleus' simulation. At the top, a stability scale in seconds ranges from 10^{-18} to 10^{18} , with a pink arrow pointing to the half-life of Helium-5 at 7.6×10^{-12} s. The central focus is a large blue sphere labeled 'Unstable Helium-5' containing a cluster of 2 protons and 3 neutrons. Below this are two bowls: an orange bowl for 'Protons' and a grey bowl for 'Neutrons', each with up and down arrow controls. To the right, a control panel shows 'Protons: 2' and 'Neutrons: 3', a 'Symbol' box displaying ${}^5_2\text{He}$, and a list of 'Available Decays' including α decay, β^- decay, β^+ decay, Proton emission (highlighted in orange), and Neutron emission. A legend at the bottom right identifies the particles: Proton (orange), Neutron (grey), Electron (blue), and Positron (green). The bottom navigation bar includes 'Build a Nucleus', a home icon, 'Intro', 'Screen 2', 'Screen 3', and the 'PhET' logo.

Screen on the principles of half-life, radioactive decay and stability

For more information: [jmdonev @ ucalgary.ca](mailto:jmdonev@ucalgary.ca)

Build a Nucleus Simulation: Chart Screen

Helium-5

- Protons: 2
- Neutrons: 3

Nuclear Shell Model

Energy ↑

Protons

Neutrons

Partial Nuclide Chart

Proton Number (0 to 10)

Neutron Number (0 to 12)

- Stable
- β^+ decay
- β^- decay
- α decay
- Neutron emission
- Proton emission

Magic Numbers

Build a Nucleus

Intro Chart Screen 3

PIET

Color coded screen on the most likely decay a nuclide will undergo, in addition to showing half-life and decay arrows for each nuclide

For more information: [jmdonev @ ucalgary.ca](mailto:jmdonev@ucalgary.ca)