

ANNUAL OCTOBER 2024

PEPA

Periodicals





Individuals testing out the Queen's University themed eclipse glasses which were locally distributed to the community.
<https://www.queensu.ca/physics/2024eclipse>



Community members viewing the eclipse from Tindall Field at Queen's University. Photo by Nikhil Arora.

2024 Total Solar Eclipse in Kingston

Nikhil Arora

On April 8th, 2024, the city of Kingston experienced a total solar eclipse; the first one in nearly 700 years! For a little over three minutes, the Sun, the Moon, and the Earth perfectly aligned to cause ephemeral daytime darkness and a moment of mystery and excitement. The Department of Physics, Engineering Physics, and Astronomy (PEPA), played a key role in science education and outreach for this once-in-a-lifetime event.

Over 50 volunteers, consisting of faculty, staff, graduate students, and undergraduate students in PEPA and other departments visited 50 schools to carry out 97 eclipse themed workshops. These workshops included sessions about eclipses in general, hands-on building pin-hole cameras, safety discussions, and the scientific discoveries made during past eclipses. Along with these school workshops, we ran various public events, such as public talks for the Queen's Observatory, Kingston libraries, and local bars, solar observing with telescopes at farmers markets and Maple Madness, and online virtual workshops for teachers and parents. One of the most exciting public events was an interdisciplinary collaboration between PEPA and the DAN

School of Music and Drama, where a team of physics and drama students put together a night of eclipse-themed plays called "Total Eclipse of the Arts".

On the day of the eclipse, over 100 volunteers from Queen's were present at 19 different locations in Kingston to provide enthusiasm, knowledge, and safety instructions. These eclipse viewing parties included over 5000 people at Fort Henry and over 6000 people at Tindall Field on Queen's Campus. The volunteers were a diverse group from different specializations (not just physics) and various career stages. At Fort Henry, Queen's physics students presented along side Bob MacDonald from CBC's Quirks and Quarks. Our department also turned Tindall Field into a mini science fair to showcase campus-wide STEM efforts. Around 3:20pm, the Moon completely covered the Sun, a moment that was celebrated with cheers and awe by the crowd. While there aren't many words to describe what happened in the sky, the celebratory roar of the crowd enhanced the spectacle.

These efforts, led by PEPA, was the largest science outreach initiative run by Queen's. We reached all corners of Kingston, impacting local residents and visitors. Over the year leading up to the eclipse, we were able to spread enthusiasm in the community and hopefully inspire the next generation of scientists! •

Message from the Outgoing Head

Rob Knobel, Department Head, 2019-2024



Welcome to the 23-24 update from the Department of Physics, Engineering Physics, and Astronomy (PEPA) at Queen's. We're proud to share some of the big events and news that have happened in the Department over the past year.

During my headship, we welcomed Ivan Iorsh from positions at the Weizmann institute in Israel and ITMO University in Russia. Ivan is a theoretical physicist who studies the interaction of light with matter in nanostructured materials.

Congratulations to many of our professors. Nir Rotenberg, Greg van Anders, and Aaron Vincent received tenure this year, and Nahee Park had her assistant professor position renewed.

Our professors continue to do world-leading research earning big funding to support it. The Arthur B. McDonald Canadian Astroparticle Physics Research Institute was renewed with another 5 years of funding to support research in dark matter, neutrinos, and cosmology, and

large funding in support of quantum physics and optical computation techniques is coming to Steve Hughes, Nir Rotenberg, and Bhavin Shastri.

Our graduate and undergraduate programs continue to attract strong students, and to bring exceptionally qualified graduates to the workforce. Our graduate program is larger than ever, with over 100 graduate students. The PEPA undergraduate program continues to grow, and over a third of our engineering students graduate with a full year of internship experience.

The department had unprecedented outreach activities this year. The biggest was outreach for the solar eclipse – where Queen's gave over 100,000 pairs of eclipse glasses to the Kingston community, and departmental volunteers provided dozens of information sessions across the city.

Thanks to the alumni, parents, and donors who continue to support our work. We couldn't deliver excellent education or research without your help!

As you read through the updates in this brochure, consider visiting us when you come through Kingston. Our department continues to evolve, grow and change – and we are proud to share new ideas with you! •

Message from the Incoming Head

Larry Widrow, Department Head, 2024-



I am pleased to contribute to the 2024 PEPA Periodicals as incoming Department Head.

I have been a Queen's professor and a member of QUARG (Queen's/RMC Astronomy Research Group) since 1993. I enjoy thinking about the dynamics of the Milky

Way, the nature of dark matter, and clever ways of analyzing large astronomical data sets. I also enjoy teaching upper-year courses with lots of math and theory.

Let me begin by thanking Rob Knobel for his service as Head for the previous five years. Rob led our Department through the Covid-19 pandemic and the challenging budget situation that has confronted Queen's and especially the Faculty of Arts and Science over the past year. On a more uplifting note, Rob, along with many other faculty, students, and staff organized Queen's Eclipse 2024, a spectacularly successful outreach event centered on the total solar eclipse of April 2024.

Despite our financial challenges, there is reason to be optimistic about the future of the Department. In July, we welcomed Kristine Spekkens to the faculty. Kristine was previously a professor at the Royal Military College and an adjunct professor at Queen's. She is a graduate of our Honours Physics program and received a PhD from Cornell. Kristine studies the structure and evolution of galaxies using radio telescopes and numerical modelling. She is one of the most active members on the Canadian Astronomy scene. In particular, she is the Canadian Science Director of the Square Kilometer Array, a billion-dollar international project to build the world's largest telescope. The SKA will provide an unprecedented view of the Universe once it is deployed in the coming years.

This fall, we will interview candidates for a new tenure-track faculty position in astroparticle physics. The position is made possible by a \$30

million gift from Queen's alumnus Bruce Mitchell (Sc'68, DSc'20), which is funding numerous initiatives through the Mitchell Research Program and is associated with the McDonald Institute. We are also excited about experiential learning opportunities in conjunction with Smith Engineering (formally, the Faculty of Engineering and Applied Science).

The Department continues to attract outstanding undergraduate and graduate students. Of the 100+ full time graduate students in the Department, 20 hold major scholarships. Faculty are publishing more than ever and winning major grants that help fund ground-breaking research. •

Message from the Department Manager

Julie McDonald, Department Head

Welcome to the Department of Physics, Engineering Physics, and Astronomy (PEPA)! A lot has happened in the past year, it will be hard to fit all of it to one page.

Thanks to the Better Education (BED) Fund, we purchased several new function generators and other much needed supplies for the engineering labs as well as new round tables and white boards for the foyer to encourage collaboration and thought exchange among our undergraduate students. We are always grateful for the BED Fund, as it allows us to buy supplies to enhance the student experience in Stirling Hall.

We installed a new helium liquefier plant, which will capture and re-liquify helium boil-off from various helium-using experiments for re-use, allowing for less helium waste, which is a finite resource.

The single photon detector is up and running in the Nanophotonics Centre! After installing



a conduit to run optical fibres from various laboratories to the detector, this powerful technology is now available for research experiments. This technology is important for optical quantum applications, and the development of technologies such as quantum sensors, processors, and machine learning units.

We also had a lot of change. Chuck Hearn, our Chief Instrument Maker, retired after 40 years. He is missed dearly, but has vowed to return to join our Monkey Golf team! Our long time Academic Assistant, Aubert Periera, passed away. He was a great asset to our engineering program and was much loved by all who knew him. We also said good-bye to our Finance Assistants, Tammie Kerr and Michaela Mills. Due to restructuring within FAS, our indispensable finance team was moved to the Faculty Office. They will be missed, but we hope they can remain part of our team. PEPA will not be the same without the people who make it special.

Two of our graduate students won prestigious awards – Jacob Ewaniuk received the Vanier Scholarship and Irina Babayan was the recipient of the Vector Award. Congratulations to these two outstanding students! •

Introduction to Ivan Iorsh

I hail from Saint-Petersburg, Russia (which had the name of Leningrad at the time that I was born in 1986). The city is located between the Finnish gulf and Lake Ladoga, the largest lake in Europe, which is remarkably close in size to Ontario. I pursued my major in technical Physics from the Saint-Petersburg Polytechnic University and commenced my research in semiconductor optics in Ioffe Institute of Russian Academy of Sciences. I embarked on my PhD journey in Durham University, UK. My thesis centered on modeling the kinetics of a novel type of semiconductor lasers. Fortunately, my position was funded by Horizon Europe, enabling me to attend numerous schools and conferences, broadening my horizons and fostering enduring collaborations. During my PhD, I

also got two new hobbies, which remain important parts of my life: boxing and sailing. Luckily, Kingston offers great opportunities for practice in both of those.

After defending my thesis in 2013, I returned to Russia to join a newly established research team focused on the optics of metamaterials and metasurfaces in ITMO university. In 2018, I defended my habilitation, secured an independent faculty position and established the research group "Light-Matter Coupling in Quantum Materials".

I joined Queen's in January 2024. My research agenda is to explore the fundamental aspects of light matter coupling in quantum materials in a threefold way. First is how to probe quantum correlations optically. Second is how to harness quantum correlations in matter to construct quantum light for information processing. And the third is how to use light to tailor quantum phases of matter. The research agenda implies intensive collaboration with experimental groups at Queen's as well as in the UK, Germany, and Israel. There are now open undergraduate, postgraduate and postdoc positions in the group. •



Ivan Iorsh

Introduction to Kristine Spekkens

Hello! I joined as a faculty member in July 2024, though my association with the department goes back several years. Originally from Burlington, Ontario, I obtained undergraduate degrees in Physics and Math from Queen's. A decade later, after completing my PhD at Cornell and holding a Jansky postdoctoral fellowship at Rutgers, I was cross-appointed to Queen's while on faculty at the Royal Military College. I am thrilled to have now joined Queen's as a professor! I am an astronomer, and my research focusses on understanding galaxy structure and evolution.

I am specifically interested in measuring atomic gas in star-forming, nearby galaxies like our Milky Way, and using it to test predictions for how galaxies evolve within the cosmological model that describes the structure and evolution of the universe itself. Atomic gas is particularly powerful for tracing the interplay between galaxy dark matter halos and their cosmic environments, which between them should dictate the physics that drives galaxy evolution. I lead a research group that is working to elucidate that physics through detailed models of the distribution and motion of atomic gas in galaxies, and by searching for gas in the faintest and most extreme systems in our local universe.

My team avidly uses the world's biggest radio telescopes to measure gas in galaxies, and we are also helping to build the next generation of facilities that will survey the sky more broadly, sharply, and deeply than ever before. We are particularly engaged in preparing for the Square Kilometer Array (SKA) telescope, a global mega-science project that will revolutionize our understanding of gas in galaxies across cosmic time when it comes online towards the end of this decade. As the Canadian SKA Science Director, I coordinate between university, government and international stakeholders to help maximize the benefit to Canadians from our government's investment in the SKA.

When I am not thinking about galaxies and telescopes, I am almost always hanging out with my family. We frequently walk, bike, and

skate near home in downtown Kingston, and we also spend a lot of time at our cottage near Ottawa. My winter cottage passion is cross-country skiing along the rail trail, while my summer passion is my electric hydrofoil: if you happen to spot someone surfing the Gatineau River on a lime green board, it's probably me! •

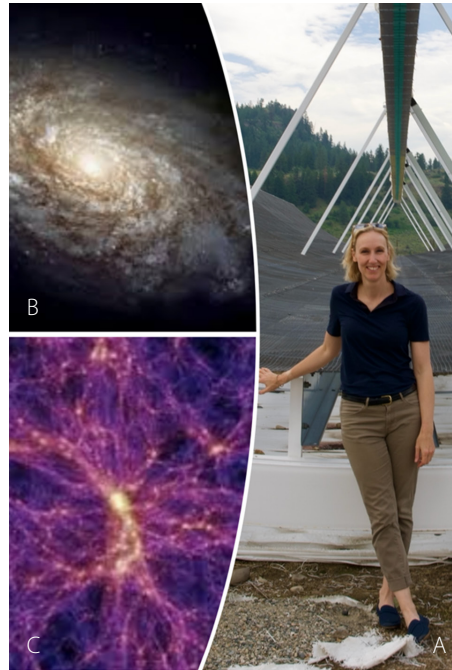


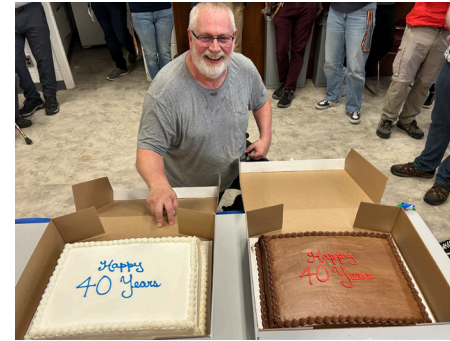
Image A: Kristine alongside a radio telescope at Canada's Dominion Radio Astrophysical Observatory (DRAO, Image A, image credit: Nathan Deg). A Milky Way-like galaxy (Image B; image credit: NASA) and a cosmological simulation (Image C; image credit: Springel et al. 2005, Nature, 435, 629).

2023/2024 Department Retirement

Chuck Hearn retired from Queen's in 2024 after more than 40 years of service to the Department. He began his career at Queen's as a technician with the van de Graaf nuclear research



accelerator. With the transition of the Queen's nuclear group to the fledgling Sudbury Neutrino Observatory (SNO) experiment, the accelerator was sold and Chuck began work on SNO, where he made key contributions to the construction of the detector in Sudbury and the intricate calibration equipment needed for the experiment. With the successful conclusion of SNO, Chuck worked for the department, first as the supervisor of the Staff-Student machine shop and later as Chief Instrument Maker. In these roles he was well known to multiple generations of PEPA graduates as the go-to person for equipment and instrument support. We thank Chuck for his many years of contributions to the department! •



Chuck Hearn with celebratory retirement cakes.

Indigenization – Equity, Diversity, Inclusion, Accessibility, Anti-Racism (I-EDIAA) Initiatives

The EDIIF Committee and GEMINI-P

The Department of Physics, Engineering Physics, and Astronomy (PEPA) is dedicated to Indigenization – Equity, Diversity, Inclusion, Accessibility, Anti-Racism (I-EDIAA) topics within our unit. Two groups are highlighted as proactive and community facing within the department environment.

Gender Minorities in Physics (GEMINI-P) is a student-led group founded in 2021 to support and promote the presence and equity of gender minorities in the department. This group's aims are to improve the quality of life, research, and education for those in physics and related fields who experience additional barriers due to their gender. Members of this group range from undergraduate students to faculty, welcoming all who are interested in learning more about making science fields more accessible for folks of all genders. GEMINI-P hosts many events such as social activities (movie nights, cookie decorating, etc.), celebrations for International Day of Women and Girls in STEM (Science, Technology, Engineering and Math), an active journal club discussion group, and a mentorship program to pair students in underrepresented groups with professionals in academia or industry who may have had similar experiences during their career.

You can keep in touch through Instagram: <https://www.instagram.com/geminip.queens/>.

Guest Speaker Dr. Kristine Spekkens

WEDNESDAY MARCH 6 @ 12PM IN STRLING 201



"Sex-Disaggregated Systematics in Canadian Time Allocation Committee Telescope Proposal Reviews"

We hope to see you there!!

questions? email us: geminip@queensu.ca

Poster of a recent GEMINI-P event, where Kristine Spekkens joined us to share insights on how sex and gender impact telescope allocation time in Canada.

The department also has an embedded Equity, Diversity, Inclusion and Indigenization Facilitation (EDII-F) Committee, which includes representation from faculty, staff, undergraduate and graduate students, and postdoctoral fellows. The committee helps the department aim to reach a fully equitable, diverse, and inclusive community. The EDII-F Committee was formed in 2019 and remains active. In 2020, the committee initiated a multi-year, ethics approved process to complete a detailed climate survey on I-EDIAA issues in our department that is now in the implementation stage with other departmental committees. Members of the EDII-F committee advise on small projects to improve our community, including a menstrual equity program in Stirling Hall washrooms. A mandate of the committee is to gather data within the department, and thus they engage with the university's Diversity and Equity Assessment and Planning (DEAP) Tool for self-reflection, goal setting, and reporting on I-EDIAA initiatives. •

Message from the Department Student Council

Izzy McKee and Tamzin Coles

Undergraduate student life in the department of Physics, Engineering Physics, and



PEPA Student Council 2023-2024 at End-of-Year Banquet.

Astronomy (PEPA) can be very busy, but it is also incredibly rewarding.

Every year the department student council (DSC) runs many events and programming with the hopes of enhancing the student experience within PEPA outside of academics. This year, the DSC kicked off the year with a welcome barbecue for undergraduate and graduate students, as well as staff and faculty in the department.

Another highlight from this year for the DSC was the mentorship program where 3rd and 4th year students were paired with 2nd year students. This initiative helped students acclimate to the program and provided incoming students with even more guidance and support throughout the year. Some other



Physics & Engineering Physics Department Student Council 2023-2024 at Trivia Night at Clark Hall Pub.

standout events from this year were the sticker and merchandise sales, art nights, mentorship nights, movie nights, and many other events that gave students the opportunity to socialize with their peers outside of class. We finished the year off with a formal end-of-year banquet that gave students a chance to get together one last time before final exams and the summer. It also provided a moment of reflection and celebration, highlighting the camaraderie and achievements of our student body and the department throughout the year. To all our graduating students, we would like to extend our congratulations and wish you the best of luck for your future endeavors!

An Update from the Graduate Physics Society (GPS)

Yilda Boukhtouchen

The Graduate Physics Society (GPS) was very busy this last year, hosting social events, launching the Queen's Physics Undergraduate Mentorship Program, and continuing EIEIOO (a two-week summer school).

The social events this year covered a wide-range of activities, including:

- ▶ Weekly drop-in board game nights in the Stirling lounge, where you can find everything



Graduate students making liquid nitrogen ice cream.

from Exploding Kittens to Terraforming Mars.

- ▶ A dessert competition, where eight participants competed for a \$50 gift card to support their culinary endeavours — and the judges had a great time tasting a variety of delectable creations!
- ▶ Our first Physics-Chemistry face-off: a paintball match for the ages, and the catalysis for many cross-departmental friendships.

- ▶ Group excursions to the trampoline park, laser tag, and minigolf.

- ▶ A large physics graduate cohort attending the first showings of Oppenheimer and Dune Part 2. Thank you to our graduate student organizers: Melissa Baiocchi, Shamus Tobin, Jean-Marie Coquillat, Katarina Bleau, Yilda Boukhtouchen. ♦

Inaugural Year of Q-PUMP (Queen's Physics Undergraduate Mentorship Program)

The last two years of a physics undergraduate degree are pivotal, as students decide if they would like to pursue graduate studies, apply to industry positions, or pursue one of many post-graduate options. To provide support for 3rd and 4th year undergrads considering graduate school, we put together Q-PUMP, a program where undergrads are paired with a graduate student mentor in their research area of interest.

By meeting throughout the year, the undergrads had a reliable resource to reach out to with questions about graduate school. Q-PUMP also organized a CV and Research Statement workshop, followed by a peer review session where mentors provided feedback.

In this first iteration of Q-PUMP, a total of 22 undergraduate-graduate student pairs participated, and we hope to grow the program in the future!

Thank you to our graduate student organizers: Avani Bhardwaj, Leo (Jungjoon) Kim, Yilda Boukhtouchen. ♦

The 6th SummEr Particle Astrophysics WorkshOp (EIEIOO)

The undergraduate students embarking on research assistantships in astroparticle physics this year were off to a great start as they attended EIEIOO 2024, a two-week summer school encompassing dark matter, neutrinos, astroparticle detectors, astrophysics, coding, and laboratory skills. EIEIOO has been organized by graduate students each year since 2019. Beginning in 2021, EIEIOO has been hybrid, allowing students beyond Queen's to benefit — this year had a total of 309 registrants.

Each year, EIEIOO is a tremendous accomplishment spearheaded by graduate students! Organizers must plan and schedule two weeks worth of lectures and workshops, many of which were given by Queen's faculty, graduate students, and postdocs.

Thank you to our graduate student organizers: Minya Bai, Avani Bhardwaj. ♦



Graduate students hosting a Halloween costume party in the Departmental lounge.



Queen's astronomy graduate students at the Canadian Astronomical Society meeting.

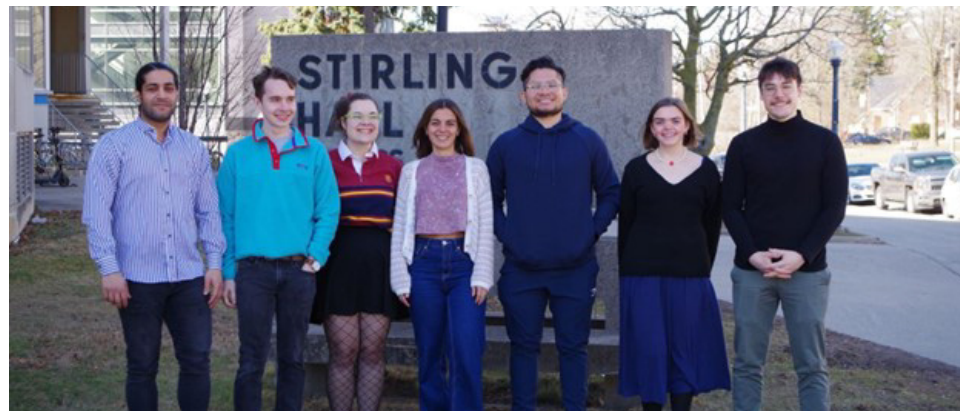
Optica Student Chapter at Queen's University

Sofia Arranz Regidor

The Optica Student Chapter at Queen's University hosts a group of graduate students pursuing research in condensed matter physics, optics, and photonics. Our goal is to share our work and promote this fascinating field with both students and the community.

We have had a very productive year with a series of activities and outreach programs. In April, we had the opportunity to organize a small get together to watch the total eclipse, a once-in-a-lifetime opportunity!

In May, we participated in Science Rendezvous, where we had a booth showcasing some optical experiments including a laser maze, spectroscopy demonstrations, and a total internal reflection in water experiment.



Queen's Optical Student Chapter: Kasra Shadkami, Fraser McCauley, Toni Neill, Sofia Arranz Regidor, Braulio Antonio, Becca VanDrunen, and Jacob Ewaniuk.

We are also organizing a series of focused talks called Light Matters, where students and postdocs can showcase the research happening at Queen's in the fields of photonics, condensed matter physics, and material sciences. In May, we had our first edition with talks from three different departments:

- ▶ Ph.D. student from the Department of Electrical and Computing Engineering: Heidi Miller, "The (Micro)Rings of Power".
- ▶ Ph.D. student from the Department of Physics, Engineering Physics, and Astronomy: Sofia Arranz Regidor, "Theory and applications of waveguide QED and quantum circuits using matrix product states"., and
- ▶ Postdoctoral Fellow from the Department of Chemistry: Omar Lopez, "Computational modeling for accelerating materials discovery".

Additionally, in June, we had a Lunch & Learn event, where we welcomed Dr. Olivia Wheeler-Williams from Edmund Optics, who gave an excellent talk on application-based approaches to ultrafast laser optics.

Starting in the fall of 2024, we aim to continue our Light Matter series and start a new activity, Lab Tours, where we will explore the labs performing cutting-edge research on campus.

Participating in the chapter has many benefits, such as helping develop technical knowledge, leadership experience, and creating connections

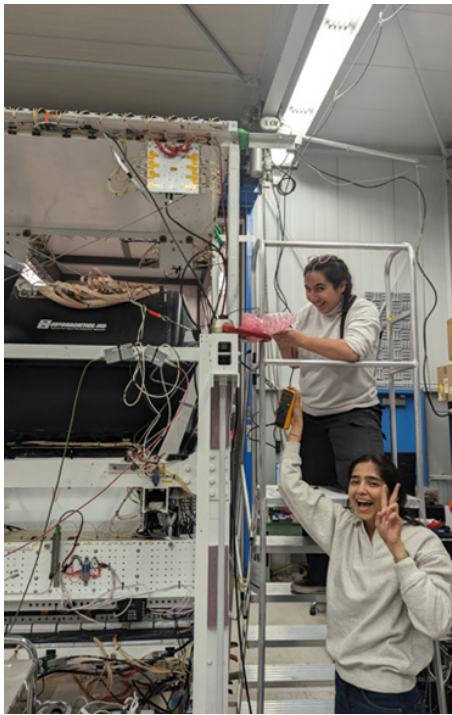
with peers at Queen's and other researchers in the field around the world. If you are hoping to pursue research in condensed matter physics or photonics you can join us, or simply follow us on LinkedIn (Queen's University Optica Student Chapter) and stay tuned for events happening in the coming year! ♦

HELIX

Nahee Park

This summer was an exciting time for the Laboratory for Extreme Multi-Messenger Astrophysics (LEMMA) group at Queen's University led by Nahee Park. One of her experiments, the High-Energy Light Isotope eXperiment (HELIX), was successfully launched from the Esrange Space Center located at Kiruna, Sweden. Floating at an altitude of ~40km, HELIX followed the Polar Vortex and successfully landed on Ellesmere Island (Umingmak Nuna), Nunavut in Canada after 6 days of flight. This flight was the moment toward which the HELIX collaboration was working very hard for several years.

While we learn a lot about the Universe by observing photons (like radio and visible light), other particles known as "cosmic rays" also bring us information about the Universe. The HELIX experiment is designed to search for elemental isotopes, especially beryllium,



Graduate students, Avani Bhardwaj and Melissa Baiocchi working on the payload.

among these cosmic rays. The majority of cosmic-ray beryllium isotopes are created by particle interactions as cosmic rays travel throughout our Galaxy. Similar to carbon dating, we can use the measured isotope ratios of beryllium to study how long cosmic rays travel inside of our Galaxy. These measurements will provide important clues to explain the recent discovery of excess antimatter particles in cosmic rays.

Since cosmic rays can be destroyed when they interact with Earth's atmosphere and become other subatomic particles, HELIX must operate at high altitudes using a long duration balloon provided by NASA. Separating isotopes is a challenging task especially because cosmic rays are very energetic. For precision measurements, HELIX has 13,000 separate channels of particle detector components and a 1 Tesla superconducting magnet on board. The HELIX team at Queen's University, including postdoctoral scholar Conor McGrath, and graduate students, Melissa Baiocchi and Avani

Bhardwaj, have participated in the simulation, calibration, and flight support of the detector. Undergraduate students Kaan Sun, Gabrielle Barsky-Giles, Gabriel Huyer, Rebecca Dudley, Laurie Amen, Adam Aippersbach, and JJ Fisman-Guarascio also contributed either as summer research scholars or by pursuing HELIX-related subjects as their thesis topic. HELIX is funded by NASA, NSERC, and CSA. •



HELIX payload ready to be launched.

Science Rendezvous

Alex Wright

Science Rendezvous Kingston returned to Slush Puppie Place (formerly K-Rock Centre, Rogers K-Rock Centre, and Leon's Centre) on May 11th, 2024. The event was a huge success, with 5201 visitors interacting with 60 booths and 480 volunteers. Over 500 people came through the doors in the first 11 minutes and the crowds continued to the end.

PEPA, along with our partners at SNOLAB, the Institute of Particle Physics, Queen's University Optica Student Chapter, and the McDonald Institute, was once again one of the major contributors to the event, with more than 35 physics students, staff, and faculty contributing their time and their talents to present an engaging set of activities designed to highlight the fascination of science.

Activities presented by PEPA:

- ▶ Centripetal Spinners
- ▶ Whirlpool bottles
- ▶ "Floating picture" experiment
- ▶ A high speed camera with demos and hands-on activities



Some of our PEPA Science Rendezvous volunteers as we await the arrival of our guests.

- ▶ An interactive virtual tour of SNOLAB
- ▶ A slide show of images from the impressive aurora borealis event that happened the evening before Science Rendezvous
- ▶ Science Art ("Draw yourself as a Scientist")
- ▶ Smoke ring cannons
- ▶ A Gravity Table
- ▶ Solar telescopes
- ▶ A "power walk" exploring the Universe on different length scales
- ▶ Solar eclipse chalk art
- ▶ Pin hole cameras •



Junior scientist finding joy in knocking down cups with an air cannon... or perhaps blowing our volunteer's hair back.



Eyes to the sky in our outdoor activity.

Congratulations

Cave Travel Scholarship Fall 2023

- ▶ Lance Schonberg – Physics (attended CUPC in Waterloo)
- ▶ Matt Marzano – Astrophysics (attended CUPC in Waterloo)

Department-Funded Travel

- ▶ Ciaran Byles-Ho – Eng Phys (department sponsored travel to the 2024 SCINAPSE Undergraduate Science Case Competition)
- ▶ Ciaran Byles-Ho – Eng Phys (spent summer 2024 at the Institute for Microbiology and Biotechnology at the University of Bonn)
- ▶ Ekin Yelken – Eng Phys (department sponsored travel to the 2024 ACE Nationals)
- ▶ Simon Bronkhorst-Ilavsky – Eng Phys (spent summer 2024 in Germany interning at the University Hospital Shleswig-Holstein)

Summer 2024 NSERC Undergraduate Student Research Awards

- ▶ Eilis Sheahan – Eng Phys
- ▶ Emma Godbout – Astrophysics
- ▶ Gabrielle Barsky-Giles – Physics
- ▶ Irina Babayan – Astrophysics
- ▶ John Timpson – Eng Phys
- ▶ Josef Naus – Mathematical Physics
- ▶ Kate Iacobucci – Eng Phys
- ▶ Meghan Naar – Physics
- ▶ Melanie Galipeau – Eng Phys

Summer 2024 Undergraduate Student Summer Research Fellowships

- ▶ Lance Schonberg – Astrophysics

Additional Graduate Student and Postdoctoral Fellow Congratulations

- ▶ Ciaran Byles-Ho and Team – First prize at 2024 SCINAPSE Undergraduate Science Case Competition (USCC)
- ▶ Felix Thiel – Best student talk at the Canadian Astronomical Society meeting
- ▶ Irina Babayan – Vector Institute Scholarship
- ▶ Jacob Ewaniuk – Dennis Washington Leadership Graduate Scholarship
- ▶ Jacob Ewaniuk – Vanier Scholar
- ▶ Qinrui Liu – Institute for Particle Physics

Early Career Theory Fellowship
▶ Tristan Austin – Vector Institute Scholarship

Faculty and Staff Congratulations

In addition to the acknowledgement by our Department managerial reports, we have additional congratulations to share:

- ▶ Aaron Vincent – nominated as Champions of Mental Health.
- ▶ Aaron Vincent – The Excellence in Instruction in the Engineering Physics Program granted by the Department Student Council.
- ▶ Alexandra Pedersen (McDonald Institute) and the Queen's Doctoral Internship in University Administration (QDIUA) Team – received a special recognition for staff award.
- ▶ Bhavin Shastri – granted an NSERC Collaborative Research and Training Experience program (CREATE) program called NUCLEUS (Network for Ultrafast Computing with Light on Emerging Unconventional Semiconductors).
- ▶ Bhavin Shastri – Early Career Award from the Ontario Government.
- ▶ Bob Gooding – celebrated 35 years at Queen's.
- ▶ Edward Thomas (McDonald Institute) – Received the Black Physicians of Canada inaugural Edward Thomas Advocacy Award at the BPOC's 2023 annual gala dinner and awards banquet. The honour was conferred for historical work on the Queen's ban of Black medical students and related work in engaging the university and medical community.
- ▶ Guillaume Giroux – Subatomic Physics Discovery Grant.
- ▶ Ivan Iorsh – Discovery Grant (Individual) program.
- ▶ James Fraser – Discovery Grant (Individual) program.
- ▶ Jennifer Low – The Society of Graduate and Professional Students (SGPS) Staff Excellence Award.
- ▶ Jordan Morelli – The Geoff Lockwood Award for Excellence in Teaching Physics granted by the Department Student Council.
- ▶ Kayll Lake – celebrated 45 years at Queen's.
- ▶ Kristine Spekkens – 2024 CASCA (Canadian Astronomical Society) Executive Award.
- ▶ Melissa Balson – Best Student Support

- granted by the Department Student Council.
- ▶ Nahee Park – Subatomic Physics Discovery Grant.
- ▶ Nir Rotenberg – received Early Researcher Award from the Ontario Government.
- ▶ Ryan Martin – led a group of 8 multi-disciplinary undergraduates to publish *Exploring a targeted approach for public health capacity restrictions during COVID-19 using a new computational model*.
- ▶ Sarah Sadavoy – “First Year Teaching Award” from Smith Engineering for teaching first year Applied Sciences courses for undergraduates.
- ▶ Sarah Sadavoy – The Excellence in Instruction in the Pure Physics (Arts and Science) granted by the Department Student Council.
- ▶ Tony Noble – nominated as Champions of Mental Health.

Please excuse any omissions from the summary of the 2023-2024 awards and congratulations. •



Junior scientists exploring the Whirlpool bottles.

Stay in Touch

The Department of Physics, Engineering Physics, and Astronomy (PEPA) at Queen's would love to stay in touch. You are always welcome to visit us at 64 Bader Lane, Kingston, Ontario, or come see us work in the community.

Be sure to please check our website <https://www.queensu.ca/physics/> to stay connected with recent news, research highlights, upcoming colloquia, lectures, and events. For example, we are the proud hosts of the 2025 Women in Physics Canada Conference (WIPC).



Physics, Engineering Physics,
and Astronomy