

# The IPP – CERN Summer Student Program

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# CERN program: Overview

CERN Summer Student program is a long standing program which hosts several hundreds of undergraduates annually at CERN during July and August

- Participants are matched with a research supervisor, and participate in a number of activities, including scientific lectures, tours and social events over the course of the summer
- Generally a very well regarded program within the community and very much loved by students
- Much reviled by crotchety CERN commuters who can't get Hostel/Foyer bookings during the summer



<https://home.cern/summer-student-programme>



# IPP summer student program

As a non-member state, Canadian students can participate in the CERN program, at full cost, via the IPP program.

- Applications solicited directly via the IPP in early winter
- Candidates selected by IPP council; successful applicants are then directly admitted to the CERN program
- IPP students are required to possess an NSERC USRA position (or equivalent) spanning 16 weeks
- First 8 weeks (May – June) are spent [at a Canadian university](#) (or TRIUMF) working with a Canadian supervisor on a USRA project of their choice
- Last 8 weeks (July – Aug) are spent [at CERN](#) participating in the CERN summer student program





# Research projects

Research projects during the first two months can encompass anything within the scope of the IPP (i.e. USRA supervisor is an IPP member and/or funded via SAPES)

- While at CERN, students have the opportunity to conduct research under the supervision of a CERN-based researcher on anything within the CERN program
- **Theory projects** are included (either in Canada, at CERN, or both)
- **Non-CERN-affiliated projects** are encouraged during May – June; we will arrange for students to be paired with CERN-based projects for July – Aug.
- IPP students have the option of continuing their USRA research project if it is a CERN project and if adequate supervision is available (this is frequently the case for ATLAS projects)
- The IPP collects a list of project proposals from prospective supervisors, but students are free to pursue USRA projects which are not on that list



<https://particlephysics.ca/research-activities/undergrad-program-cern>





# Support

Funding for the IPP – CERN program is derived from a combination sources, including the IPP MRS grant, university contributions, and NSERC USRA and supervisor matching

- The IPP provides travel-related costs (airfare, accommodation and cost-of-living), while USRA (+ supervisor matching) provides stipend.
- Relies on a certain amount of goodwill from the IPP community

Program is partially supported by one-time contributions of \$20k from several IPP member universities, and also contributions from the McDonald Institute

- University awards are typically earmarked for students from specific institutions

**This institutional support is very much appreciated!**



Arthur B. McDonald  
Canadian Astroparticle Physics Research Institute



McGill



UNIVERSITY OF  
ALBERTA



UNIVERSITY OF  
TORONTO



Carleton  
UNIVERSITY



University  
of Victoria



# Participants

80 Canadian students have participated over the past 16 years:

- 2022: Jonathan Barrett • Angela Moskal • Leandro Rizk • Michaela Robert • Ruchi Soni • Ethen Sun • Kyran Klazek-Schryer
- 2021: Paula Bosca • Darren Zeming Chan • Cole Coughlin • Paul Deguire • Michael Grehan • Kristopher Samant • Roxane Theriault
- 2020: Matthew Ens • Gillian Godden • Panagiotis Kaloyannis • Patrick Li • Haolin Liu • Michael Sloan • Alex Wen
- 2019: Sam Connolly • Genevieve Hayes • Kaitlyn Liang • Khaled Madhoun • Doris Rusu
- 2018: Jonathan Corbett • Lia Formenti • Luke Polson • Joshua Sandor • Gareth Smith
- 2017: Jared Barron • Shannon Egan • Rose Kudzman-Blais • Rachel Richardson • Frank David Wandler
- 2016: Sam Abernethy • Eleanor Fascione • Jeffrey Krupa • Theodore Tomalty • Dominique Trischuk
- 2015: Nuiok Dicaire • Matt Grant • Alan Morningstar • Martina Ojeda
- 2014: Emil Noordeh • Matthew Quenneville • Jessica Strickland
- 2013: Syed Haider Abidi • Natascha Hedrich • David Layden • Sebastien Rettie • Olivia Wasalski
- 2012: Aysha Abdel-Aziz • Matthew Bluteau • Kyle Boone • Martin Friedl • Ryan Killick
- 2011: Terry Buck • Nigel Burke • Charles Collins-Fekete • Allison MacDonald • Stephen Portillo
- 2010: Karol Krizka • Matthew LeBlanc • Ian Moulton • Kate Pachal • Sebastien Picard
- 2009: Ossama Abouzeid • Grace Dupuis • Catherine LaFlamme • Ilya Feige • Matthew Low • Robert Keyes
- 2008: Stefan Guindon • Nikolina Ilic • Andrew Louca • Tom McCarthy
- 2007: Jason Rabinovitch

**Full list of students, along with their project reports, is available on the IPP web site at <https://particlephysics.ca/research-activities/undergrad-program-cern-papers>**



# 2022...

CERN program was cancelled in 2020 due to COVID, and conducted entirely virtually in 2021

- Full (in person) program planned for 2022
- Seven IPP students selected this year:

The 2022 distribution of institutions and projects is fairly typical

~20% theory

~60% ATLAS

~35% female students

Student Institution	Project Host	Project (while in Canada)
MUN	MUN	Theory
McMaster	TRIUMF	HyperK
Queens	Queens	PICO
UofT	UofT	ATLAS
UofT	UofT	ATLAS
UBC	UBC	ATLAS
UVic	UBC	ATLAS

Students are currently working with their Canadian supervisors; will travel to CERN in late June



# Outreach

This funding scheme and combination of Canadian and CERN-based research has resulted in a very high-profile and prestigious program:

- IPP summer student positions are highly competitive and are very much coveted
  - typically 40-50 applications for 5 – 7 positions
- Feedback I've received from students has been almost universally (and enthusiastically) positive
- Notably, almost 1/3 of IPP students are from “non-IPP” institutions
  - we are reaching students who may have limited exposure to HEP at their home institutions

High “intrinsic” outreach value:

- Students talk about these positions with their peers, post pictures on social media about their trip to CERN, faculty advertise the program in their classes, university senior administrators are aware of its existence, etc.
- **This outreach potential is underexploited...**



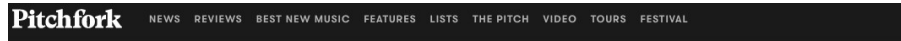




# In 2017...

...one of our IPP students was recruited to escort Montreal band Arcade Fire (her favourite band!) on a VIP CERN tour, along with the RHCPs and the Pixies

This weekend, [Arcade Fire](#), [Red Hot Chili Peppers](#), and [Pixies](#) are playing Paleo Festival in Nyon, Switzerland. During their time in Switzerland, the musicians toured [CERN](#) (the European Organization for Nuclear Research) and were asked to talk about what they learned. Members of Arcade Fire struggled to define what CERN does exactly ("It's sort of like explaining the way the world works, on the very fundamentals of the way things work,") while Pixies frontman Black Francis admitted: "I'm feeling very edified and perhaps a little bit confused, but I suppose that's a normal reaction, maybe." Meanwhile, RHCP bassist Flea enthusiastically described CERN as "a place where amazing things happen and an infinite well of curiosity can be filled!" Watch below.



NEWS

## Watch Members of Arcade Fire, Red Hot Chili Peppers, Pixies Talk Particle Physics

After taking a tour of CERN, the European Organization for Nuclear Research

By Michelle Hyun Kim

July 21, 2017



Black Francis (Brian Rasic/WireImage); Flea (Tim Mosenfelder/Getty Images); Richard Reed Parry (Roberto Finizio/NurPhoto via Getty Images)



- Female McGill undergrad physics student touring the LHC at CERN with a famous Montreal band, on a summer student program partially funded by the McGill Provost, and organized by a McGill faculty
- **McGill Outreach Office wanted nothing to do with it.**



# Conclusion

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The IPP – CERN summer student program has been a tremendous success over the past 16 years

- 80 students participating, many of whom have gone on to graduate studies and even permanent positions within the HEP community
- Very exciting opportunity for undergraduates, and a very natural vehicle for outreach
- Strong support from Canadian institutions and IPP members, both theorists and experimentalists; effective tool for community building and “in-reach”

**A huge thanks to all of those who have contributed to this program over the years, and for your continued support!**



# 2021

CERN program was cancelled in 2020 due to COVID, and conducted entirely virtually in 2021

- Full (in person) program planned for 2022
- In **2021**, seven IPP students were selected:

2 theory

4 ATLAS

2 / 7 female students

Student Institution	Project Host	Project (while in Canada)
Waterloo	UofT	ATLAS
Manitoba	Winnipeg	Theory
McMaster	UofT	ATLAS
Manitoba	Winnipeg	Theory
McGill	Carleton	Theory
Laval	McGill	ATLAS
Carleton	Carleton	ATLAS