

Welcome to the 8th annual



M c G i l l P h y s i c s
H A C K A T H O N

November 3-5th 2023
@ Rutherford Physics Building

David Gallacher, Lead Organizer
On behalf of the Organizing Committee



**Big thank you to
our team!**



DAVID
GALLACHER



CELINA
PASIECZNIK



TSVETELIN
TOTEV



NICHOLAS
VIEIRA



KIM
METERA



THOMAS
BRUNNER



ADRIAN
LIU



AHMAD
MAHMOOD



LILIAN
CHILDRESS

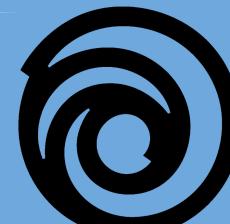
And to our sponsors!



Trottier
Space Institute
at McGill



Ciela Institute



UBISOFT



McGill

Faculty of Science



McGill

Department of
Physics

Département de
Physique



UNIVERSITÉ DE SHERBROOKE

DELL Technologies



Ernest Rutherford
Physics Building,
McGill University

2023 Schedule

Friday Nov. 3rd

Opening Ceremony: 6 - 7 PM

- » How to hackathon and some words from our sponsors

Team Formation: 7 - 9 PM

- » Form your teams and get started on a project! Rutherford is open until 9 PM with mentors on site to help you get started



Saturday Nov. 4th

Hacking: 8 AM- 10 PM

Get to work! Rutherford is open all day with mentor and organizers on-site

TSI Astro Workshop 8:30 - 9:30 AM

Learn how to access and handle public astro data sets + Bonus ML crash course

Dell Data Science Challenge 10 - 11 AM

Participate in our mini-hack challenge with Dell and learn about data science, with a chance to win more prizes

Industry Networking Lunch 12 - 1 PM

» Meet with our sponsors and enjoy some lunch

Sunday Nov. 5th

Hacking: 8 AM- 2 PM

- » Time to wrap it up!

Judging: 2 - 3 PM

- » Head over to your judging stations!

Awards Ceremony 4 - 5 PM

- » Prize and winner announcements!

McGill Physics
HACKATHON



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McGill Physics
HACKATHON

Hackathon - What to expect

At the start of the hackathon

- Find a team (if you don't have one)
- Chat with mentors and other teams to bounce ideas off of each other!
- Once you've selected your project topic, chat with mentors to get some helpful starting advice on directions to take
- Plan out responsibilities and chat with each other about your goals and what you want to accomplish in over the weekend
- Be respectful of your teammates interests! If one of you is a python expert but would like to work on something else, then try to accommodate it, the hackathon is a learning experience



Hackathon - What to expect

During the hackathon:

- Come to Rutherford all weekend, we will have space and food and volunteer support to make sure you succeed in your projects!
- Join in on other mini-challenges and chat with sponsors and organizers about hackathon and physics in general! (and to win more prizes!!!)
- Make sure you're backing up your work! (Ask a mentor about git if you're not familiar)
- Try to continuously evaluate your progress, you may have to scale back your project, so it's possible to finish! This is totally normal.



Hackathon - What to expect

At the end and after the hackathon:

- Make sure you try to finish your project and get it uploaded to Devpost!
- Practice your presentation and decide on who's explaining what etc.
- Wait until you get your judging schedule! Each team will be judged by two panels, make sure you show up on time and introduce yourself and tell the judges your career stage (HS, CEGEP, UGrad etc..)
- Wait until the awards are announced and chat with other groups!
- Don't forget to vote for your favourite project on Devpost for the people's choice award!
- Awards will be announced after all judging and tallying is completed, around ~4 PM on Sunday



CODE OF CONDUCT

https://www.hackathon.physics.mcgill.ca/code_of_conduct.pdf

Expected Behaviour

Treat all participants with kindness, respect, and consideration, valuing a diversity of views and opinions...

All communication should be appropriate for a professional audience...

Unacceptable Behaviour

Harassment, bullying, intimidation, or discrimination of **any sort** based on **any of the grounds** given in the code of conduct

Harassment: unwanted or hostile conduct that has a negative impact on the person and results in a harmful environment for the person



JUDGING CRITERIA

Communication

How effective/engaging/coherent is the presentation overall? Is the presentation of the physics and the methods used to present the problem solution clear and understandable?

Technical Execution

Did the team solve a challenging technical problem? Did the team get a working demo completed within the allotted time? Is it remarkable that teams could hack this project in just a day or two?

Aesthetics

Is the solution beautiful/elegant/polished? Does the solution show the beauty of scientific computing?



PRIZES



1st Place



2nd Place



3rd Place

\$1250

\$1000

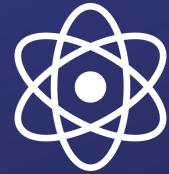
\$750



Astro
Prize



ML Prize



Quantum



People's
Choice



\$300 equivalent

Devpost

Check out past years projects for inspiration!

<https://mcgill-physics-hackathon-2022.devpost.com/>

<https://mcgill-phys-hack-2021.devpost.com/>

Don't be afraid to come up with something new! Follow what interests you



Machine Learning Prize



**reComputer J1010 -Edge AI Device with
Jetson Nano module, M.2 Key E Slot,
Type-C connectors, Aluminium case,
pre-installed JetPack System**



Astro Prize

**Celestron 21024
FirstScope Telescope!**



Quantum Prize!



Now a word from our
sponsors...



$p(z|x_t)$

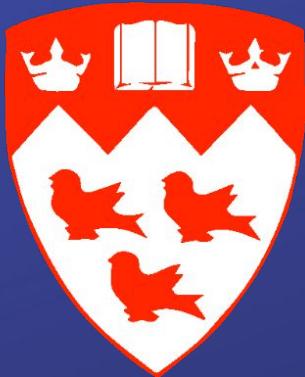
UBISOFT

LA FORGE

Our mission : to **facilitate technical prototyping**
based on the most recent academic research

topics

LAFORGE@UBISOFT.COM



McGill

Department of
Physics

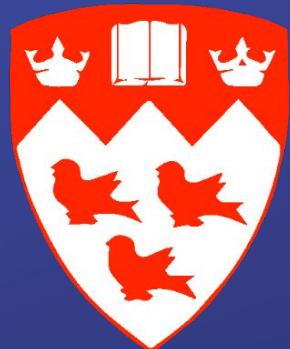
Département de
Physique





Comprendre l'Univers
Understanding the Universe





McGill

Faculty of Science





Trottier Space Institute at McGill
Institut spatial Trottier de McGill

Who We Are

The Trottier Space Institute at McGill is an interdisciplinary research centre that brings together researchers across McGill working on space-related topics. TSI was established in 2015 thanks to a generous gift from the Trottier Family Foundation.

Our mission is to advance the frontier of space-related science through world-class research, training, and community engagement.



TSI Research Areas

Formation & Evolution of
Stars & Planets

Radio Transients

Experimental Particle
Astrophysics

Early Universe &
Theoretical Cosmology

Compact Objects

Experimental & Low-
Frequency Cosmology

Nuclear Astrophysics

Exoplanets: Climates,
Atmospheres, Surfaces

Astrobiology

Opportunities for undergraduate students at TSI



Funding for summer research (TSI Summer Research Awards)



Professional development program for undergrad researchers



Communicate your science in our Outreach programs



Access computing resources and training



Seminars, discussion groups & journal clubs

Summer Research at TSI

Summer Undergrad Research Program

- Co-organized by TSI and Physics
- Weekly discussions and workshops on topics related to all aspects of research life (talk to your group, giving academic talks, writing CVs, EDI in STEM, etc)
- Program ends with a research showcase to the department (including awards for best talk)
- Fosters community with other undergrads

TSI Summer Undergraduate Research Awards

- Fully funded research internship, 6-8 positions available
- Open to undergraduate students enrolled at Canadian universities
- Applications open in Jan. 2024!

Outreach Opportunities at TSI

Public Talks

Science in Space:
How to Telescope

Indigenous
Outreach

Observing Nights

Astronomy on Tap

School Visits

24 heures de
science

Science
Literacy Week

AstroFest @ the
Planetarium



TSI at the Hackathon

We're sponsoring this year's
Astro Challenge!



Win a Celestron Firstscope ✨

We're hosting a workshop on
working with astro data

“Accessing and Manipulating
Astronomical Data using Python”

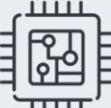
Sat. Nov. 4, 8:30 - 9:30 am

One of the top Canadian incubators in deeptech

Focusing on the commercialisation of...



Quantum technologies



Microelectronics



Life sciences



Digital technologies



Sustainable technologies



Advanced manufacturing

One of very few incubators with a quantum-specific stream:

- Personalized coaching adapted to the quantum reality
- Mentors from the quantum industry
- Direct access to investors

Nord
Quantique

t0.technology

QSi
Silicon Reinvented

Chemia
Discovery

SBQuantum

Qubic

Ki3PHOTONICS
Technologies

PASQAL

INTRIQ

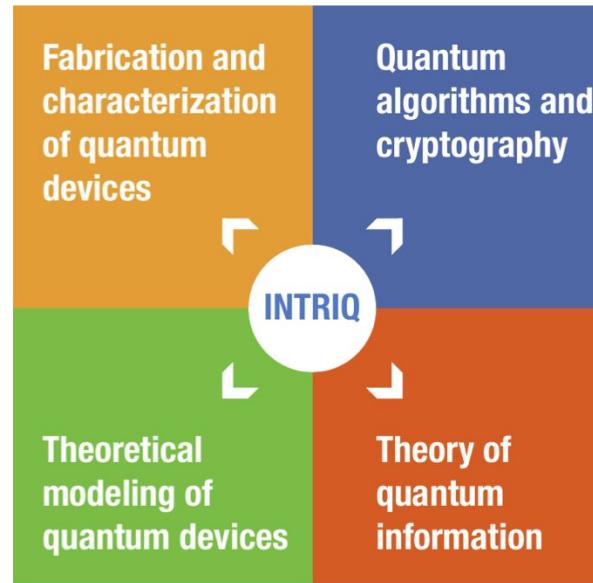
Micheal
Caouette-Mansour, PhD
Candidate

+

Valentin Boettcher, PhD
Candidate

INTRIQ: l'Institut Transdisciplinaire d'Information Quantique

- Several institutions:
 - McGill
 - Sherbrooke
 - Polytechnique
 - Université de Montréal
 - Concordia
- Sponsorships:
 - Hackathon
 - Women in Physics
 - Jeux de la Physique
 - Scientific realism workshop
 - Qcrypt
 - CUPC
 - ...more!...



DELL Technologies



McGill Society of Physics Students (MSPS)

Hello Hackers!



Join the Physics Discord server (link sent by email or use QR code)



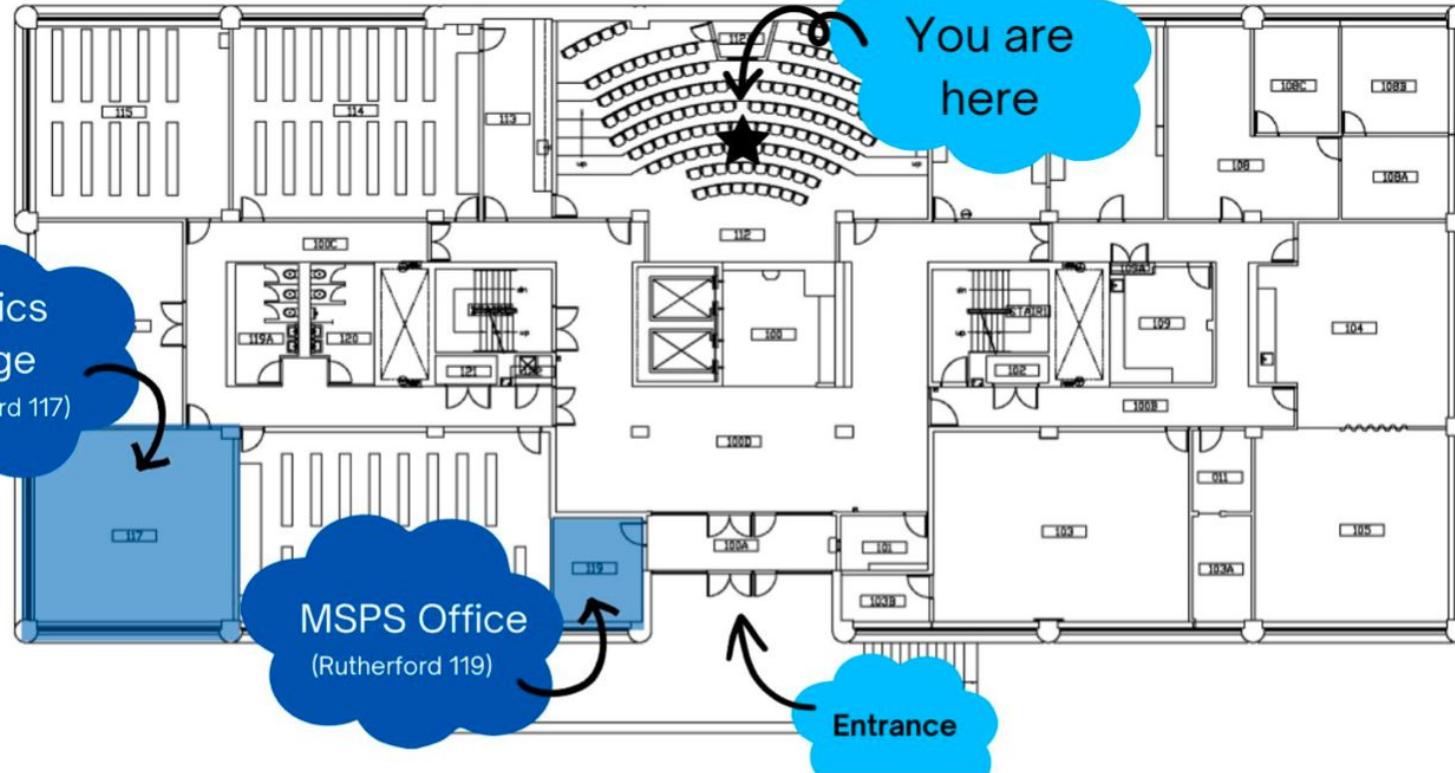
@msps_mcgill



McGill Society of Physics
Students (MSPS)



Where to find us?



Become a volunteer for MSPS!

Help run events & plan initiatives!

Flexible commitment!

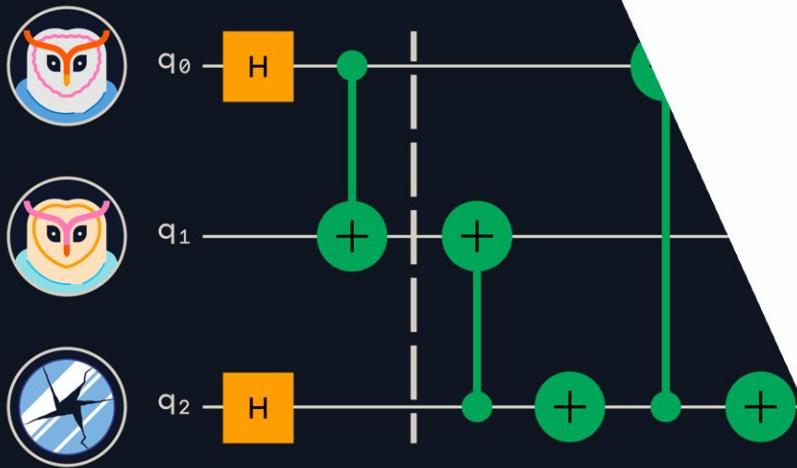
Get a mention on your
co-curricular record! (good
for CV)



SIGN UP HERE!

Quantum computing educational tools on

quantumenigmas.com



Ghislain Lefebvre
ghislain.lefebvre2@usherbrooke.ca





Explore Algorithmically

Montreal Institute for Astrophysics and Machine Learning

Ciela is a research institute associated with the Université de Montréal, with the mission to contribute to breakthrough discoveries in astrophysics by developing new computational data analysis methods. It supports a unique interdisciplinary community of world-leading researchers in astrophysics and machine learning. [Read about our research.](#)

Back to our regularly
scheduled
programming



Submit your projects to
Devpost

<https://mcgill-physics-hackathon-2023.devpost.com/>



Open now! Closes 2 PM
Sunday Nov 5th



Photographer

There are photographer(s) around the building this weekend! If you do not want your photo published please make sure to wear your nametag all weekend with the no-photo sticker visible.



HPC Resources

Does your project need some more juice?

Talk to me for access to a HPC virtual cluster!

<https://jupyter.physhack.calculquebec.cloud/>



Get to work!

Follow organizers to the space we have for today!

There is a midterm happening in Room 118, please be respectful when passing by!

We have space on the third floor as well, Rooms 326, 322 and 305A/B are available

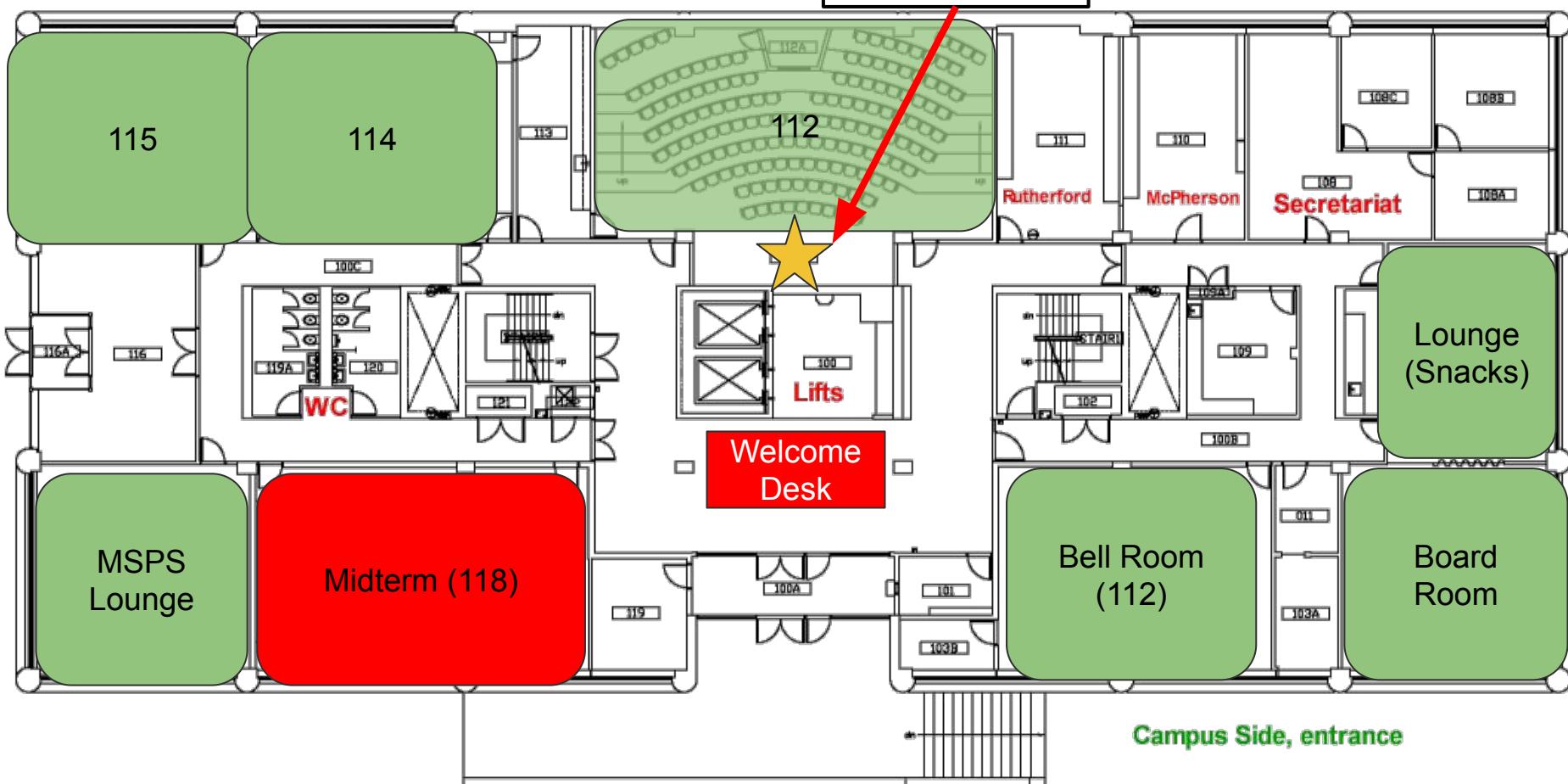
Snacks and drinks will be available in the lounge shortly!



McGill Physics Building, 1st floor

You are here

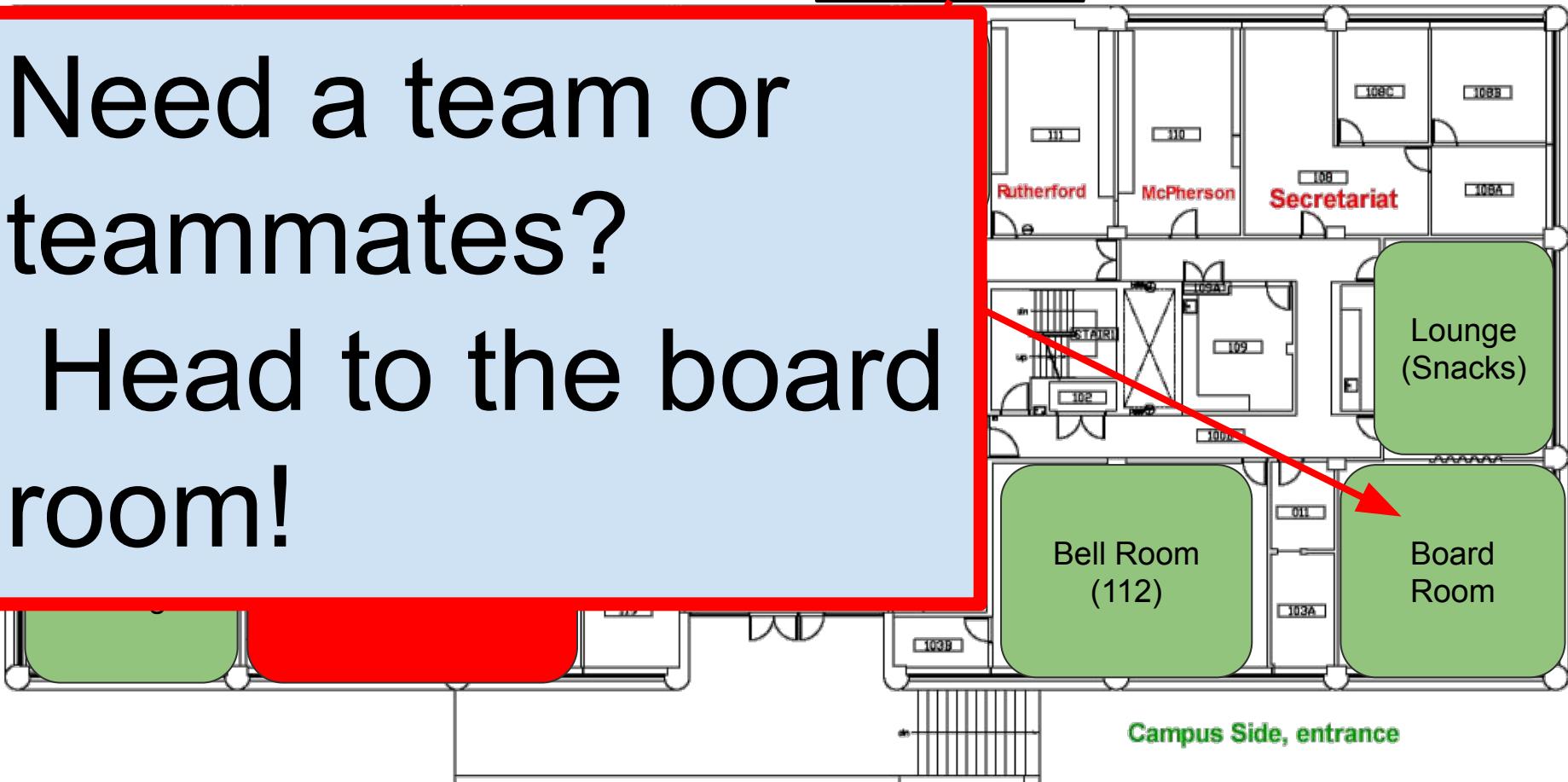
University Street Side



You are here

University Street Side

Need a team or
teammates?
Head to the board
room!



McGill Physics Building, 1st floor

You are here

University Street Side

We will put out
snacks and drinks
in ~1 hour

