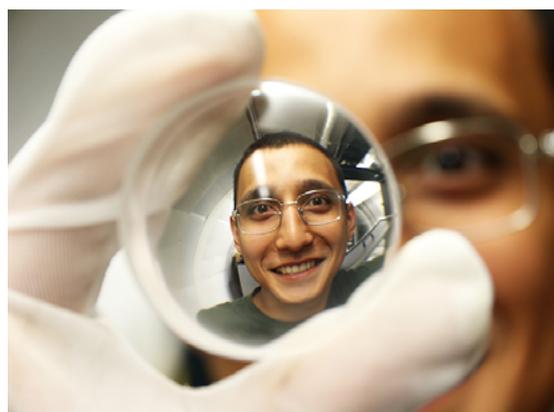


GUIDE FOR SUMMER STUDENT PARTICIPANTS

PREM, REU, SERCCS, SUNRiSE

Summer 2023



CLASSE
Cornell Laboratory for Accelerator-based Sciences & Education

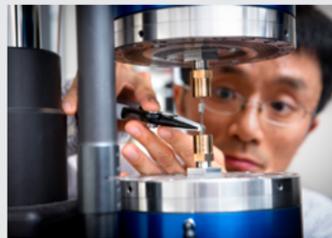
CHES
CORNELL HIGH ENERGY
SYNCHROTRON SOURCE



[CLASSE](#) is a team of scientists, students, researchers, engineers, technicians and personnel that studies our world and universe using x-rays and high energy electrons and proton beams. Our research aims to increase the scientific reach of future accelerators and open new doors for industry.



At CLASSE, we study the Higgs boson with the Large Hadron Collider, glimpse the early universe with the Atacama Cosmology Telescope, and develop organic solar cells and study the folding of long DNA strands at the CHESS national x-ray user facility. CLASSE also advances the frontiers of beam science, and develops the technology needed to produce and accelerate ultra-bright, high power beams for research, medicine and industry.



Sample at CHESS, being prepared for x-rays

CORNELL HIGH ENERGY SYNCHROTRON SOURCE (CHESS)

CHESS is a national user facility that provides synchrotron x-ray capabilities for investigators in all fields of science and engineering. It uses synchrotron light given off by charged particles as they circulate in a ring at nearly the speed of light. The x-ray beams generated at CHESS help scientists and researchers understand materials from airplane wings to cell membranes, from pollutants in plants to matter under earth-core pressures.

CHESS is currently undergoing an extensive upgrade for a new High Magnetic Field (HMF) beamline. The [HMF facility](#) will enable research that is currently not achievable anywhere in the world.



Testing SRF Cavities

SUPERCONDUCTING PARTICLE ACCELERATION

Cornell is a leader in particle beam acceleration based on superconducting radio frequency (SRF) cavities, a technology of choice in modern accelerators. CLASSE scientists work to improve cavity energy efficiency, reliability and performance. Cornell has developed and industrialized the cavities chosen to power seven facilities around the world, and is currently working on a prototype Energy Recovery Linac (ERL) named CBETA with Brookhaven National Lab.



CMS Detector at CERN

PARTICLE PHYSICS AND ASTROPHYSICS

Cornell scientists develop and explore the theories that might have been operative in the early universe using the Large Hadron Collider (LHC) in Geneva Switzerland, where the conditions of the early universe are created briefly in collisions, and a high precision experiment at Fermilab. They also apply general relativity to the dynamics of stars.



Ultra fast electron diffraction development at Newman Lab

BRIGHT SOURCES OF ELECTRONS

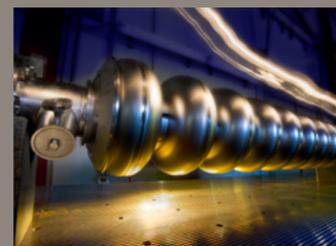
The photoinjector at CLASSE holds records for both beam current and brightness and meets the needs of future accelerators, including an Energy Recovery Linac. Further advances on photocathode technology and beam halo will enable even better performance, and new applications such as ultrafast electron diffraction.



CESR at Wilson Lab

STORAGE RING DYNAMICS

Using CESR, lab scientists study ultra-compact electron and positron beams, advancing accelerator performance for future light sources and particle physics colliders. This work takes advantage of superb beam instrumentation, feedback and control systems as well as sophisticated accelerator models. CESR is recognized internationally as an outstanding training ground for graduate students and post-docs who become leaders at accelerator laboratories around the world.



Building SRF Cavities

PRODUCTION, ACCELERATION AND TRANSPORT OF ELECTRON BEAMS

The Center for Bright Beams is one of 12 NSF Science and Technology Centers. It joins scientists from multiple Cornell departments, other universities and national labs to address major challenges in the production, acceleration and transport of electron beams. CBB aims to revolutionize the brightness of electron beams, extending the reach of science, medicine and industry.

Greetings!

Welcome to the Cornell Laboratory for Accelerator-based Sciences and Education (CLASSE) and the Cornell High Energy Synchrotron Source (CHESS) at Cornell University. We all hope that your time at Cornell will be interesting, stimulating, and enjoyable.

If you have questions, comments or suggestions, please let us know!

Katerina Malysheva (evm23@cornell.edu) in Newman 130 (607-255-4951)

Florianna Blanton (fgb29@cornell.edu) in Room 114 of 391 Pine Tree Road;

Louise Debeve (lmd252@cornell.edu) in Wilson 275



Louise Debeve
PREM Faculty
lmd252@cornell.edu



Kate Shanks
SERCCS Faculty
ksg52@cornell.edu



Katerina Malysheva
Program Administration
evm23@cornell.edu



Prof. Matthias Liepe
REU Faculty
mul2@cornell.edu



Prof. Joel Brock
PREM Faculty
joel.brock@cornell.edu



Florianna Blanton
Program Administration
fgb29@cornell.edu



Prof. Jim Alexander
REU Faculty
jim.alexander@cornell.edu



Matt Miller
SUNRISE Faculty
mpm4@cornell.edu

Please visit our website to see everyone involved in summer programs!

Orientation Day - AGENDA

MONDAY, JUNE 5: 120 Physical Sciences Building

- 9:30 – 10:00am Welcome!
- 10:00 - 11:00 CLASSE & CHESS Facility Overviews
- 11:15 - 11:45 Summer Programs and Important Program Details
- 11:45 - 12:15pm Student & Mentor “One-on-One “
- 12:30 - 1:30 Lunch
- 1:30 - 2:30 Explore Cornell
- 2:30 - 3:30 Synchrotron & X-ray Basics - Discussion

Important Dates



Monday June 5

9:30am - 2:15pm

Welcome & Orientation

Physical Sciences Building, Room 120

Tuesday, June 13

12:30pm – 2:00pm

CESR, CHESS & Wilson Lab Tour

Wilson Lab - Conference Room 301

June 28 & 30*

10:00am - 1:00pm

3-Week Presentations & Lunch

Wilson Lab (301), Physical Sciences Bldg. (401)

August 10 & 11*

10:00am - 2:00pm

Final Presentations & Lunch

Physical Sciences Building, Atrium & 401

EVENT CALENDAR

* Please make sure to regularly consult the calendar. Some items are listed as mandatory and attendance is required, while others are listed as optional. Some events are specific to individual programs.

The program staff, participants and calendar are listed on our web page:

www.classe.cornell.edu/StudentOpportunities/SummerProgramResources

PROJECT REPORT

You will submit a brief written Project Report. The details of the project report will be determined by your mentor. Reports/ final presentations/ posters are due at the end of the program, please see your program calendar for specific dates.

CLASSE COFFEE HOURS - EVERY TUESDAY AT 9:30 AM

Beginning on Tuesday, June 13, there will be an optional once-a-week CLASSE coffee hours from 9:30 - 10:30 AM on Tuesdays in room 401 of the Physical Sciences Building (PSB). These are chances to catch up with other summer researcher participants and staff, discussing science and engineering and practicalities of summer life and fun in Ithaca. Snacks will be provided.

COMMUNICATION SEMINARS - EVERY THURSDAY AT 9:30 AM

These science communication seminars are designed to provide students with the skills necessary to present their research to colleagues at the end of the summer and to become future voices for scientific advancements.

Overall, this seminar series will equip participants with the skills, knowledge, and confidence to communicate science effectively to a range of audiences and to build a successful career through science communication. By the end of the ten weeks, participants will have the tools they need to present their research effectively, engage with the media and the public, and establish themselves as science communicators in their own right.

Led by the Science Communications team at CLASSE, along with scientists and engineers of the lab, students will learn how to communicate their science to various audiences using multiple channels effectively.

SURVEY AND EVALUATIONS:

We are striving to make the summer student program as beneficial as possible. Please expect an anonymous survey via email that will help us achieve this goal.



- **Onboarding** - All persons must complete the CLASSE Safety Onboarding Form. Discuss with supervisor/host to outline necessary trainings
 - May also need to request a radiation badge if entering radiation areas (Wilson) or working with radiation producing equipment.
- **Training** - CLASSE 911 – Wilson Safety Onboarding, Wed. 06/07 at 10AM via Zoom
- **Elec. Outages** - Wilson Lab has planned electrical outages this summer (dates may shift):
 - July 5 – 18: CHESS Hutches and L0
 - July 28 – July 31: Lab-wide outage
 - July 28 – August 11: West wing, all floors.

Please check with your mentor about how this will affect your project.

Call 911 for situations that require police, fire or medical response to preserve life. (607)-255-1111 for Cornell University Public Safety Dispatch.
Learn more at: emergency.cornell.edu

Computing @ CLASSE

- **CLASSE computer accounts**
 - Password reset: <https://www.classe.cornell.edu/pwm/public/ActivateUser> (do not reuse your Cornell password)
 - Enroll in CLASSE Duo: <https://wiki.classe.cornell.edu/Computing/CLASSEDuo> (different from Cornell Duo)
- **Getting started with CLASSE computing:**
 - <https://wiki.classe.cornell.edu/Computing/SummerStudentOrientation>
 - Please use CLASSE and Cornell computing resources responsibly.
 - Beware of phishing emails: think before you click!
 - **Getting help:** First, talk to your mentor. Then,
 - CLASSE-IT homepage: <https://wiki.classe.cornell.edu/Computing/WebHome>
 - Submit a CLASSE-IT ticket: email service-classe@cornell.edu (and cc your mentor)
- **Programming & scientific computing info sessions (optional)**
 - Hands-on training: Friday, 09-Jun-2023 @ 10:00 AM in Wilson 301
 - Weekly office hours: Wednesdays @ 9:00 AM on Zoom (link in calendar)



GANNETT HEALTH CENTER

www.health.cornell.edu
mentalhealth.cornell.edu

Location: 10 Central Avenue, next to Willard Straight Hall, phone 607-255-5155

Gannett Health Center offers emergency medical services with access to emergency care at the Cayuga Medical Center of Ithaca and referral to specialty medical care. Summer hours are Monday through Friday, 8:30 a.m. to 4:30 p.m. Students visiting for the summer are not covered under any Cornell insurance plan, and are expected to pay for any medical and emergency services while they are here.

STUDENT SUPPORT AND ADVOCACY SERVICES

Student Support and Advocacy Services is a newly reimagined organization within the Office of the Dean of Students, in Student and Campus Life. We strive to help students navigate challenging issues in all facets of their lives. We utilize non-clinical, trauma-informed, and identity-conscious approaches to our work with students. Our team of dedicated professionals focuses on creating a welcoming, non-judgmental, and caring environment that aims to facilitate access to holistic support services and campus and local resources.

Our focus areas include campus-wide case management and crisis response services. Case management consists of building 1-on-1 helping relationships with students while coaching them toward resources, self-care, and self-advocacy.

ADDRESS	CONTACT	OFFICE HOURS	DROP IN-HOURS
Elizabeth C. Staley Center 200 Willard Straight Hall	p: 607-254-8598 studentsupport@cornell.edu	Monday - Friday 8:00 am - 5:00 pm	Monday-Friday 10:00 am - 3:30 pm.

HUMAN RESOURCES AND BIAS REPORTING

For any human resources questions or concerns please email our CLASSE HR team at:

classehr@cornell.edu

For reporting a bias incident:

diversity.cornell.edu/our-commitments/bias-reporting-cornell

LGBTQIA+ RESOURCES

<https://scl.cornell.edu/LGBTRC>

The LGBT Resource Center is the hub of LGBTQ+ student life and resources at Cornell. We provided advocacy, outreach, education, support, and community to LGBTQ+ students of all identities, backgrounds, and experiences. We envision a community where individuals experience a sense of community, empowerment, and inclusion and can thrive as their whole authentic selves.

The resource center is located on North Campus in the 626 Thurston Avenue building on the 3rd floor. The physical space includes a beautiful lounge to socialize and a multipurpose room perfect for studying or holding a meeting. Professional staff is confidential and available for individual support during business hours or by scheduling an appointment using the links on our "About Us" page. The LGBT Resource Center also hosts events and programs that provide community building and educational opportunities throughout the year.

CONTACT	STAFF HOURS
(607) 254-4987 lgbtrc@cornell.edu	Mon - Fri 9:00 am-5:00 pm

STUDENT DISABILITY SERVICES

<https://sds.cornell.edu>

Student Disability Services works in partnership with Cornell faculty, staff, and students to ensure that all aspects of student life are accessible, equitable, and inclusive of individuals with disabilities.

We recognize the historical and systemic disparities that exist within our healthcare systems and society at large. These disparities can often have adverse and unintended consequences that further marginalize populations. We recognize these disparities exist among our student population, and can directly affect a student's ability to provide documentation of a disability. We are committed to working with every student to find appropriate and creative ways of ensuring access in every aspect of their Cornell experience.

CONTACT	STAFF HOURS
(607) 254-4545 sds_cu@cornell.edu	Mon - Fri 8:30 am-5:00 pm



The program staff, participants and calendar are listed on our web page:

www.classe.cornell.edu/StudentOpportunities/SummerProgramResources



CLASSE and CHESS Facilities

TRANSPORTATION

Car Registration Information

All vehicles registered in New York State must get a safety inspection at a DMV-licensed station every year. A valid inspection sticker must be displayed on your vehicle. Learn more at www2.tompkinscountyny.gov/dmv

Taxis

Collegetown Cab: (607) 588-8888

Ithaca Dispatch: (607) 277-7777 or (607) 272-3333

Uber and Lyft are also present in Ithaca.

Buses

All Cornell students and employees are granted free access to TCAT Bus System. Students can access their bus riding privileges with their CU photo ID card.

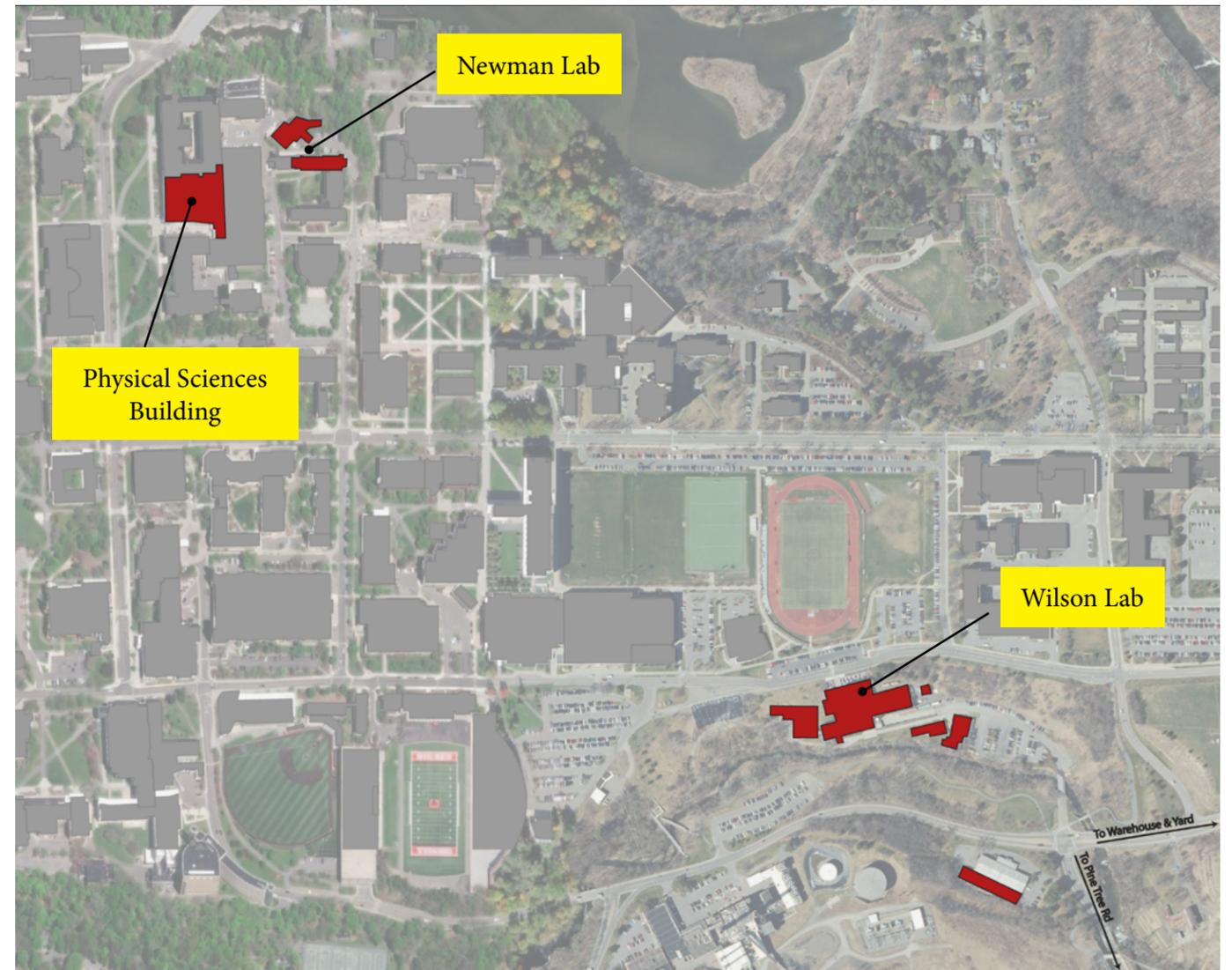
“Campus2Campus” provides transportation between the Ithaca and NYC campuses twice daily while the university is open.

Biking and Walking

Ithaca strives to make walking and biking safe for people of all ages and abilities.

Learn more at www.bikewalktompkins.org/

For information about local events and things to do in and around Ithaca, please check out: Visitithaca.com



Summer Mealplans can be purchased here:

<https://mealplan.scl.cornell.edu/summer/welcome>

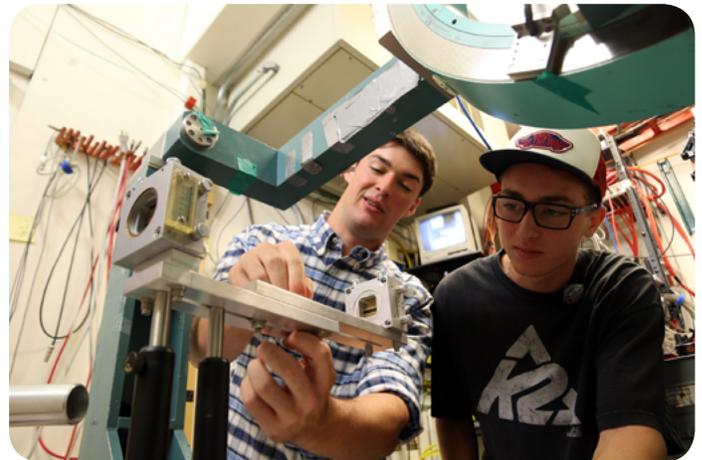
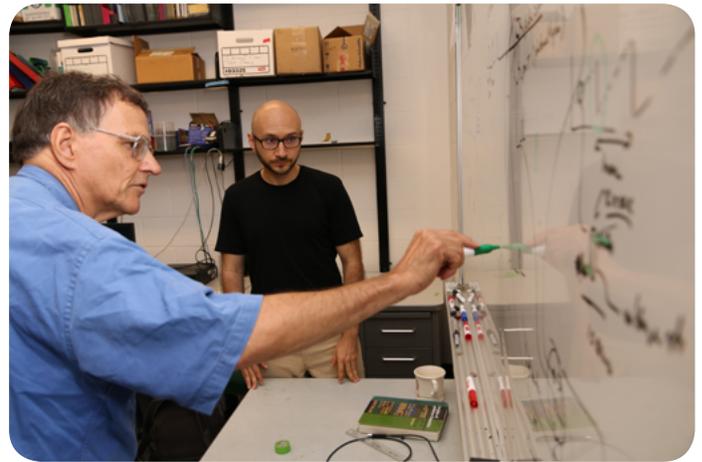


#CornellAccelerates

SOCIAL MEDIA

This is going to be a great summer filled with amazing experiences and awesome photo opportunities. We encourage you to keep in touch with your family and friends back home with social media, as well as connect with our growing social media platforms.

During the summer of 2023, we are using *#CornellAccelerates* to highlight our research and educational opportunities!



@Cornell-CLASSE



@CornellAcceleratorLab



@CornellCLASSE



For all CHES
social accounts
just scan the
QR code to
follow us!



CLASSE
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