Introductions and General Information (~70 minutes)
Lance Cooper.....Welcome
Luke Prunkard............Information on Facilities/Keys/Inventory
Rebecca Wiltfong............Information on My Physics/Website
Elaine Schulte.............Information for Graduate Teaching Assistants
Mary Schlembach.........Information on the Physics Library
Shubhang Goswami and Mark Hirsbrunner.........Physics Grad Student Assoc.
Luis de Jesus Astacio....Grad Peer Mentoring Program
Shubhang Goswami and Kai Shinbrough....Graduate Employees Organization

Break (15 minutes)

Grad Program Information (~20 minutes)
Lance Cooper....Overview of the Illinois Physics Grad Program

Welcome Luncheon: ~12:00 noon, Interaction Room, Loomis Lab

TA Training Session: 2:00 – 5:00 p.m. (Elaine Schulte and others)
New Grad Student Checklist

☐ By now, you should have done the following:
  - ✔ Filled out your paperwork with Wendy Wimmer
  - ✔ Met with me for course and teaching assistantship advising
  - ✔ Registered for classes on-line!
    -- You must maintain at least 8 credit hours each semester to be a full-time student and keep an assistantship ⇒ No Later than Sept.9!
  - ✔ Registered for the qualifying exam (if applicable)
    https://my.physics.illinois.edu/grad/qual-signup
  - ✔ Received and accepted your teaching/research assistantship
    -- Sign up for mandatory campus TA training next week! Go to TA training "bootcamp" this afternoon

If you haven’t done this yet, please see me as soon as possible!
Bookmark the Grad Student Blog!

https://physics.illinois.edu/academics/graduates/blog/

**GRADUATE STUDENT BLOG**

7/22/2019
Lance Cooper
Time to Register for the Fall 2019 Physics Qualifying Exam
August 19 is the deadline for registering on-line for the Fall 2019 Physics Qualifying Exam on Aug. 26 and 27.

7/17/2019
Lance Cooper
Dr. Henrik Rudolph's Special Physics Careers Slides on Scientific Publication Posted
The July 17 Physics Careers seminar slides of Dr. Henrik Rudolph on "How to successfully contribute to the world of scientific publishing: a presentation meant for the aspiring author or reviewer" have been posted

7/15/2019
Lance Cooper
Reminder: Deadline to Complete Self-Evaluations for 2018-2019 is August 15, 2019
Just a reminder that **August 15, 2019** is the deadline to complete your 2019 Physics Grad Student Self-Evaluations.

7/14/2019
Lance Cooper via Nadya Mason
Microsoft Station Q Purdue is Looking for a Postdoctoral Associate
Microsoft Station Q Purdue is looking for a post-doctoral associate to study low temperature transport phenomena in hybrid superconductor/semiconductor structures.
Curriculum/Course Requirements

https://physics.illinois.edu/academics/graduates/degree-requirements

COURSE REQUIREMENTS

The Graduate College requires 90 hours (formerly 24 units) of course work for the PhD, including research units in Physics 597 and Physics 599. Most physics students having half-time assistantships take 8 hours per semester plus 4 to 8 hours in the summer, so the total credit requirement may be fulfilled in approximately four years. Note that at least 8 hours of PHYS 599 Thesis Research is required; most students have many more.

AS A BREADTH REQUIREMENT, TWO OF THE FOLLOWING SEVEN COURSES ARE REQUIRED

- Physics 540 Theoretical Astrophysics
- Physics 550 Biomolecular Physics
- Physics 560 Condensed Matter Physics I
- Physics 569 Emergent States of Matter
- Physics 570 Subatomic Physics
- Physics 513 Topics in Quantum Optics and Information
- Physics 514 Modern Atomic Physics

Note that only one of either the Physics 560 or Physics 569 courses counts toward the breadth requirement and only one of either Physics 513 or Physics 514 counts toward the breadth requirement.

In addition, all students are urged to take Quantum Mechanics I and II (Physics 580 and 581), Mathematical Methods A and B (Physics 508 (MMA) and Physics 509 (MMB)), Electricity and Magnetism (Physics 505), and Classical and Quantum Mechanical Systems (Physics 504). Students will find a number of advanced courses on more specialized topics indispensable in their preparation for research.

The department has no formal language requirement. Graduate students may find it advantageous, however, to be proficient in reading articles in a foreign language. For this reason, graduate students are allowed to enroll in language courses offered in the various language departments at UIUC.

To receive an appointment as a teaching assistant, an international graduate student is required to demonstrate proficiency in spoken English. This proficiency can be demonstrated in one of four ways: By having a score of 24 or above on the speaking sub-section of the Internet Based TOEFL, By having a score of 8 or above on the speaking sub-section of the IELTS academic exam, By having a score of 50 or above on the TSE, or By having a score of 50 or above on the locally-administered UIUC Speak Test. A number of "English as a Second Language" (ESL) courses and helpful tips for English language improvement are provided by the University.
First Year Courses at UIUC

- There are few course requirements
  - Biophysics
  - Nuclear and Particle
  - Astrophysics
  - Quantum Optics & Information or Atomic Physics
  - Condensed Matter or Emergent States of Matter

- But it’s likely you will start with
  - Quantum Mechanics I and II (580,581)
  - Mathematical Methods 1 and 2 (508, 509)
  - Electricity and Magnetism (505), Statistical Mechanics (504)
  - Undergraduate Quantum 2 (487), E&M 2 (436), Classical Mech 2 (326), Stat Mech (427)

- And everyone takes 596 (Physics Orientation)
First Few Semesters at UIUC

- Advanced courses specialize
  - Condensed Matter Physics II
  - Quantum Field Theory I and II
  - Particle Physics
  - General Relativity
  - Nonequilibrium Statistical Physics
  - *Special topics* (Phys 598) courses – one benefit of a big department!!

**After your first year or two, you will primarily take research credits:**

Physics 597, Independent Study – Graded class, taken prior to prelim

Physics 599, Thesis Research – Taken once you pass your prelim

You will always need to register for at least 8 credit hours in the Fall and Spring terms to be full-time students!
First Few Semesters at UIUC

- **Teaching**
  - This is important training, giving you an opportunity to make an impression on professors you might do research with, so take it seriously!
  - A chance to learn how to be a good teacher: we have many *award-winning TAs*! This looks good on your resume, especially if you’re applying for faculty positions!
First Few Semesters at UIUC

- **The Qual:**
  - Qual exam on Monday, Aug. 26 and Tuesday, Aug. 27 this year from 1-5 p.m. in **Rm. 222/276 Loomis**.
  - Qual FAQ and problems: [http://physics.illinois.edu/academics/graduates/qual-faq](http://physics.illinois.edu/academics/graduates/qual-faq)
  - Make sure to register if you’re taking free-shot: [https://my.physics.illinois.edu/grad/qual-signup](https://my.physics.illinois.edu/grad/qual-signup)
Research !!

- Picking an advisor (there are many available)
  - Physics 596 Research Talks in Fall
  - Research opening advertisements on Grad Student Blog
  - Make your own one-on-one arrangements!
  - Start looking early, attend seminars, talk to faculty!

<table>
<thead>
<tr>
<th>Field</th>
<th>Experimentalists</th>
<th>Theorists</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condensed Matter Physics</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>Atomic-Molecular-Optical Physics</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Biological Physics</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>High Energy Physics</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Medium Energy (Nuclear) Physics</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Astrophysics/Cosmology</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Physics Education Research</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Cross-Cutting Research</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>
Physics

Agenda for Phys 596 (Friday, 11:00-12:50, Rm. 136):

- Research opportunities in the department, finding advisors, etc.
- Instruction/practice in scientific writing and presentation
- Scientific publishing process, using on-line resources, etc., etc.

https://courses.physics.illinois.edu/phys596/fa2019/

Make sure you register for this course! It is required!
Interested in applying for a grad fellowship?

- 1st year and (most) 2nd year grad students are eligible
- Celia and I will hold an NSF Fellowship Workshop, 6-8 pm on Wednesday, Sept. 18
- We will hold an NSF Fellowship pre-competition in October
- Stay tuned to the grad blog for more details!
Years 2-N: Focus on Research

- You’ll join a group
  - By no later than the summer after your first year
  - Often supported by an RA but otherwise you can still be a TA
  - Trial research period, and you can still make changes

- Want to attend a conference/workshop not supported by your advisor?
  - Physics Grad Travel Award program
Grad Travel Award Program

TRAVEL FUND APPLICATION

PURPOSE
The purpose of the Department of Physics Graduate Student Travel Award Fund is to provide opportunities for graduate students to attend special conferences or workshops or to participate in professional development activities that are not funded by their advisers’ research grants. Travel Awards will typically be limited to a maximum of $600.

APPLICATION SCHEDULE
The 2019-2020 Physics Grad Travel Award program will be divided into three time periods, and we anticipate making 5-8 awards during each period, pending the availability of funds. Applications must be submitted by the following dates:

- September 1, 2019, for September 1, 2019 – January 31, 2020 conference travel
- February 1, 2020, for February 1 – May 31, 2020 conference travel
- May 1, 2020, for June 1 – August 31, 2020 conference travel

Applications will not be accepted for post-travel reimbursement, and the application must be received at least 30 days before the requested travel commences. Questions about deadlines and submissions should be directed to Professor Lance Cooper (lacooper@illinois.edu), associate head for graduate programs.

APPLICATION EVALUATION PROCESS
Applications will be reviewed by a graduate student committee appointed by the associate head for graduate programs, and final decisions will be made by the associate head for graduate programs. Applicants will be informed of the final decisions. All decisions of the associate head are final.

APPLICATION REVIEW CRITERIA
Review criteria include:

1. An assessment of how the proposed travel will contribute to the student’s professional development.
2. The student’s past history of travel support by the department.
3. Time remaining to PhD degree.
Years 2-N: Preliminary Exam

[Link to more information](https://physics.illinois.edu/academics/graduates/preliminary-examination)

- **The Prelim**
  - 15 page paper, oral presentation
  - “Proposal” for your thesis research
  - Typically in 3rd or 4th year
Years 2-N: Thesis and Defense

https://physics.illinois.edu/academics/graduates/thesis

- Thesis defense
  - Your own personal “book”: you’re the world’s expert!
  - Time to Ph.D. ~ 6.5 years on average (depends on field)
Life After UIUC Grad School

- Universities (post docs and faculty)
- Government Research Laboratories
  - Argonne, Fermilab, Jefferson Lab, NISTs, LANL, Livermore, LBL, Sandia, NRL, …
- Industry
  - Intel, IBM, AT&T, HP, Microsoft, AMD, Shell, Kodak, and hosts of high-tech start-ups
- Computing (hardware and software)
- Wall Street
- Management consulting
Ilinois Physics PhD Job placement

- We maintain a database of our past ~494 PhD alumni for the past 14 years
# Physics Careers Seminars

[https://physics.illinois.edu/calendar/careers](https://physics.illinois.edu/calendar/careers)

## Physics Careers Seminar Schedule, Fall 2019

<table>
<thead>
<tr>
<th>EVENT TITLE</th>
<th>SPEAKER</th>
<th>DATE/TIME</th>
<th>LOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physics Careers Seminar</td>
<td>Dr. Alan Stivers, Principle Engineer, Intel Corp. (retired)</td>
<td>8/23/2019 11 a.m.</td>
<td>204 Loomis (Interaction Room)</td>
</tr>
<tr>
<td>Physics Careers Seminar</td>
<td>Dr. Rachael Mansbach, Los Alamos National Laboratory</td>
<td>10/4/2019 11 a.m.</td>
<td>204 Loomis (Interaction Room)</td>
</tr>
<tr>
<td>Physics Careers Seminar</td>
<td>Dr. Tom Butler, Senior Machine Learning Scientist, Amazon</td>
<td>11/8/2019 11 a.m.</td>
<td>204 Loomis (Interaction Room)</td>
</tr>
<tr>
<td>Physics Careers Seminar</td>
<td>Dr. C. Keith Cassidy, Postdoctoral Research Associate, University of Oxford</td>
<td>11/15/2019 11 a.m.</td>
<td>204 Loomis (Interaction Room)</td>
</tr>
</tbody>
</table>
Advice: Get to know your interesting classmates!

Portrait of the diverse Fall 2019 Illinois Physics Graduate Class:

- 44 students in the Fall 2019 grad class
- 37 Men, 7 Women
- 20 International Students, 24 Domestic Students
- Citizenship: US (24), China (9), India (5), Taiwan (2), Bangladesh, Colombia, Italy, Kazakhstan
Advice: Keep socially active!

Getting involved with grad social groups helps relieve the stress of grad school

- Physics Grad Student Association
- Illinois-GPS: Grad/undergrad mentoring group
- Women in Physics
- Grad Peer Mentoring: Grad mentoring of 1st-year grad students
- Diversity Committee
Advice: Stay safe!

Our campus and community is reasonably safe, but it’s important to be aware of your surroundings, particularly at night.
Advice: Know who to contact if you need help!

### 24-Hour Emergency Numbers

<table>
<thead>
<tr>
<th>Service</th>
<th>Phone Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life-threatening fire, police, or medical emergency</td>
<td>9-911 (on-campus) or 911 (off-campus)</td>
</tr>
<tr>
<td>Emergency Dean (available 24/7 to assist students or their families in crisis)</td>
<td>333-0050</td>
</tr>
<tr>
<td>Domestic Violence Hotline (A Woman's Place)</td>
<td>364-4390</td>
</tr>
<tr>
<td>Crisis Line (24-hour suicide prevention and crisis hotline)</td>
<td>244-7611 or 350-1141</td>
</tr>
<tr>
<td>Faculty/Staff Assistance Program</td>
<td>244-0312</td>
</tr>
<tr>
<td>National Capital Poison Center</td>
<td>1-(800)-222-1222</td>
</tr>
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</table>

### Non-Emergency Numbers

<table>
<thead>
<tr>
<th>Department</th>
<th>Phone Number</th>
</tr>
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<tbody>
<tr>
<td>Champaign Fire</td>
<td>403-7200</td>
</tr>
<tr>
<td>Urbana Fire</td>
<td>334-2420</td>
</tr>
<tr>
<td>Savoy Fire</td>
<td>359-0814</td>
</tr>
<tr>
<td>Champaign County Sheriff</td>
<td>333-8911</td>
</tr>
<tr>
<td>Police</td>
<td></td>
</tr>
<tr>
<td>University of Illinois</td>
<td>333-1210</td>
</tr>
<tr>
<td>Champaign Police</td>
<td>351-8911</td>
</tr>
<tr>
<td>Urbana Police</td>
<td>334-2320</td>
</tr>
<tr>
<td>Savoy Police</td>
<td>333-8911</td>
</tr>
</tbody>
</table>

### Hospitals and Medical Services

<table>
<thead>
<tr>
<th>Hospital</th>
<th>Phone Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carle Hospital Emergency Room</td>
<td>383-3313</td>
</tr>
<tr>
<td>Provena Covenant Medical Center Emergency Room</td>
<td>337-2131</td>
</tr>
<tr>
<td>MidCity Health Services</td>
<td>222-7701</td>
</tr>
</tbody>
</table>
Advice: Get to know and enjoy the community!

Krannert Center for the Performing Arts

Virginia Theater

Westside and other parks

Downtown Champaign
Advice: Be aware of upcoming community events!

Upcoming Events:

Taste of Champaign, Aug. 16-17, Westside Park

Urbana Sweetcorn Festival, Aug. 23-24, Downtown Urbana

Departmental Picnic, Sept. 7, Illini Grove

Krannert Opening Night Party, Sept. 5
Upcoming Departmental Events

Required workshop for 1st-year physics grad students!

- Micro-aggression Workshop
  - Wednesday, Aug. 21, 1:00 – 2:30 pm

  Organized by the Grad Office and the Physics Grad Student Diversity Committee
Upcoming Departmental Events

- Departmental Picnic
  - Saturday, September 7, 4-7 PM, Illini Grove
Final Pieces of Advice

- And always feel free to e-mail or meet with me if you have problems or questions!