Introductions and General Information (~70 minutes)

Lance Cooper.....Welcome
Kelly Sturdyvin..........Information on Facilities/Keys/Inventory
Rebecca Wiltfong.........Information on My Physics/Website
Elaine Schulte..........Information for Graduate Teaching Assistants
Celia Elliott.........Information on Graduate Fellowships
Mary Schlembach........Information on Library
John Bowers and Elle Shaw........Physics Grad Student Association
Ben Osherson and Zach Weiner....Grad Peer and GPS Mentoring Programs
Roshni Bano....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

☐ 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!

**GRADUATE STUDENT BLOG**

Recent posts Search blog Go

8/16/2017 Lance Cooper
Adjuncts Needed for Millikan University Physics and Astronomy Courses This Semester
Millikan University needs senior graduate students (or students who have at least completed their masters) who would like some experience running their own course, to teach a college physics course at Millikan.

8/16/2017 Lance Cooper
Upcoming Outreach Opportunities of Interest to Physics Grad Students
There are three upcoming outreach opportunities, for faculty, researchers, and students on Aug. 21, Sept. 1, and Sept. 16.

8/14/2017 Lance Cooper
Grad Travel Award Application Deadline for Fall 2017 Travel is Sept. 1
**September 1, 2017** is the deadline for Illinois Physics Grad Travel Award applications for September 2017 - January 2018 conference travel.

8/10/2017 Lance Cooper
2017 Prelim/Final Exam Workshop on Sept. 5
The 2017 Physics Prelim/Final Exam Workshop will be held in Rm. 144 from 6 - 8 p.m. on September 5, 2017.
Curriculum/Course Requirements

COURSE REQUIREMENTS
The Graduate College requires 96 hours (formerly 24 units) of course work for the PhD, including research units in Physics 397 and Physics 399. 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

Pick 2 !

- 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!

The Qual:

- Start of 2nd year. FAQ: http://physics.illinois.edu/academics/graduates/qual-faq
- Archive of Problems: http://physics.illinois.edu/academics/graduates/qual-archive
Qual Exam Info on Blog

Graduate Student Blog

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Current Grad Info

Curriculum Requirements
Prelim Exam Info
Thesis Info
MS Degree Requirements
CSE Certificate Program
Useful Non-Physics Courses
PHYS 596
PGSA
Illinois GDPR
Qual Exam Info
New Student Info
Ethics Training/Info
Responsible Conduct of Research
Safety Training/Info
Grad Research Openings
Grad Travel Award
Grad Student Evaluations
Grad College Calendar
COE Grad Handbook
International Student Resources
Physics Information Resources
Useful Forms
Health/Safety Resources
MRL Safety Brochure
Important Physics Dates
Diversity Resources
Important Phone Numbers
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>High Energy Physics</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Atomic-Molecular-Optical Physics</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Medium Energy (Nuclear) Physics</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Biological Physics</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Astrophysics/Cosmology</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Cross-Cutting Research</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Physics Education Research</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>
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/fa2017/

Make sure you register for this course! It is required!
Research !!

- 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, starting probably the week of Sept. 18
  - We will hold an NSF Fellowship pre-competition in October
  - Stay tuned to the grad blog for more details!
Years 2-N: Research in Full Throttle

- 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 advisors' research grants. Travel Awards will typically be limited to a maximum of $500.

APPLICATION SCHEDULE
The 2017-2018 Physics Grad Travel Award program will be divided into three time periods, and we anticipate making 5-7 awards during each period, pending the availability of funds. Applications must be submitted by the following dates:

- September 1, 2017, for September 1, 2017 – January 31, 2018 conference travel
- February 1, 2018, for February 1 – May 31, 2018 conference travel
- May 1, 2018, for June 1 – August 31, 2018 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 (lcooper@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

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

- Thesis defense
  - Your own personal “book”: you’re the world’s expert!
  - Time to Ph.D. ~ 6 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**
Job placement

- We maintain a database of our past ~440 PhD alumni for the past 12 years

<table>
<thead>
<tr>
<th>Total # UIUC Physics PhD Graduates, 2005 - 2017</th>
<th>441</th>
</tr>
</thead>
<tbody>
<tr>
<td># UIUC Physics Grads Placed at Graduation, 2005 - 2017</td>
<td>426 (97%)</td>
</tr>
<tr>
<td>Postdoc</td>
<td>245 (58%)</td>
</tr>
<tr>
<td>US Research Universities</td>
<td>152 (36%)</td>
</tr>
<tr>
<td>Industry</td>
<td>119 (28%)</td>
</tr>
<tr>
<td>US National Laboratories</td>
<td>57 (13.4%)</td>
</tr>
<tr>
<td>Non-Research Universities or Colleges</td>
<td>15 (3.5%)</td>
</tr>
<tr>
<td>Medical Schools</td>
<td>11 (2.6%)</td>
</tr>
<tr>
<td>Non-Profits</td>
<td>9 (2.1%)</td>
</tr>
<tr>
<td>Continuing Students</td>
<td>7 (1.6%)</td>
</tr>
<tr>
<td>Unknown</td>
<td>7 (1.6%)</td>
</tr>
<tr>
<td>Searching (recent graduates)</td>
<td>6 (1.4%)</td>
</tr>
<tr>
<td>EVENT TITLE</td>
<td>SPEAKER</td>
</tr>
<tr>
<td>--------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Physics Careers Seminar</td>
<td>IMC Financial Markets</td>
</tr>
<tr>
<td>Physics Careers Seminar</td>
<td>Akuna Capital</td>
</tr>
<tr>
<td>Physics Careers Seminar</td>
<td>Dr. Manolis Antonoyiannakis, Associate Editor, Physical Review B</td>
</tr>
<tr>
<td>Physics Careers Seminar</td>
<td>Dr. Janet Sheung, Vassar College, Dept. of Physics and Astronomy</td>
</tr>
<tr>
<td>Physics Careers Seminar</td>
<td>Dr. James Hill, Computational Physics Science Division, Los Alamos National Laboratory</td>
</tr>
</tbody>
</table>
Physics

**Advice:** Get to know your interesting classmates!

Portrait of the diverse Fall 2017 Illinois Physics Graduate Class:

- 53 students in the Fall 2017 grad class
- 42 Men, 11 Women, 4 Hispanic students, 1 Deaf student
- 24 International Students, 29 Domestic Students
- Citizenship: US (26), China (15), India (5), Taiwan (2), Germany, Ireland, South Korea, Thailand, United Kingdom
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>Life-threatening fire, police, or medical emergency</th>
<th>9-911 (on-campus) or 911 (off-campus)</th>
</tr>
</thead>
<tbody>
<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>384-4300</td>
</tr>
<tr>
<td>Crisis Line (24-hour suicide prevention and crisis hotline)</td>
<td>244-7911 or 359-1411</td>
</tr>
<tr>
<td>Faculty/Staff Assistance Program</td>
<td>244-5312</td>
</tr>
<tr>
<td>National Capital Poison Center</td>
<td>1-(800)-222-1222</td>
</tr>
</tbody>
</table>

## Non-Emergency Numbers

### Fire Departments

<table>
<thead>
<tr>
<th>Department</th>
<th>Phone Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Champaign</td>
<td>403-7200</td>
</tr>
<tr>
<td>Urbana</td>
<td>384-2420</td>
</tr>
<tr>
<td>Savoy</td>
<td>359-6814</td>
</tr>
<tr>
<td>Champaign County Sheriff</td>
<td>333-8911</td>
</tr>
</tbody>
</table>

### Police Departments

<table>
<thead>
<tr>
<th>Department</th>
<th>Phone Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Illinois</td>
<td>333-1210</td>
</tr>
<tr>
<td>Champaign</td>
<td>351-8911</td>
</tr>
<tr>
<td>Urbana</td>
<td>384-2320</td>
</tr>
<tr>
<td>Savoy</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>McKinley Health Services</td>
<td>333-1701</td>
</tr>
</tbody>
</table>

Contact me and/or Wendy if you don’t know who to ask!
**Advice:** Be aware of departmental events and campus deadlines!

### Physics Communication No. 2.0
**Important Dates: Fall Semester 2017**

<table>
<thead>
<tr>
<th>Day</th>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Friday</td>
<td>Aug 18</td>
<td>New Graduate Student Orientation</td>
</tr>
<tr>
<td>Thursday</td>
<td>Aug 24</td>
<td>Proficiency Exam, 7:00 pm - 10:00 pm, 141 &amp; 151 Loomis Laboratory of Physics</td>
</tr>
<tr>
<td>Monday</td>
<td>Aug 28</td>
<td>First Day of Classes</td>
</tr>
<tr>
<td>Monday &amp; Tuesday</td>
<td>Aug 28 &amp; 29</td>
<td>Qualifying Exams, 6:00 pm – 10:00 pm 141/151 Loomis Laboratory of Physics</td>
</tr>
<tr>
<td>Monday</td>
<td>Sept 4</td>
<td>Labor Day (Holiday, No Classes)</td>
</tr>
<tr>
<td>Wednesday</td>
<td>Sept 6</td>
<td>College of Engineering Faculty Meeting, 4:00 pm B02 Coordinated Science Laboratory (CSL)</td>
</tr>
<tr>
<td>Saturday</td>
<td>Sept 9</td>
<td>Physics Picnic, 4:00 pm – 7:00 pm Illini Grove, Lincoln Avenue, Urbana</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. 18-19, Westside Park
- Urbana Sweetcorn Festival, Aug. 25-26, Downtown Urbana
- Departmental Picnic, Sept. 9, Illini Grove
- Krannert Opening Night Party & Ellnora Guitar Festival, Sept. 14-16
Upcoming Departmental Events

Required workshops for 1st-year physics grad students!

- **Deaf Culture Workshop**
  - Wednesday, Aug. 23, 11 am - noon
  - Tina Cowsert will teach us some basics of American Sign Language (ASL) and Deaf culture!


  UIUC also offers ASL courses: SHS 121, 221, and 321 (ASL 1, 2, and 3)

- **Micro-aggression Workshop**
  - Wednesday, Aug. 23, 1:30 – 2:30 pm
  - Organized by Physics Grad Student Diversity Committee
Upcoming Departmental Events

- Departmental Picnic
  - Saturday, September 9, 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!