PHYS 110

Today:
• RSO events
• Introduction to career pathways in Physics
• Alumni Panel
RSO events

This week SPS and SWIP are hosting a **trivia night** at 7pm on Tuesday Zoom link in the SPS and SWIP emails. On Friday night/evening SPS is going to do a **virtual bad physics movie night**. We're hoping to watch Real Genius, but exact details are TBD and will be announced later in the week. Next Tuesday (September 29th) the two will have coding workshop at 7-9pm.

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Careers in Physics
Physics is a flexible degree that gives you a first-principles and fundamental understanding of nature, strong math and analytical skills, and technical expertise…and that will prepare you for many different careers!

SPS & physics.org
You Have Options

Q: What can you do with a physics degree?
A: Get a PhD and become a physics professor, or...

What comes after the "or" is not widely known in many physics departments, even though data show that less than a third of physics bachelor’s degree recipients enroll in a physics or astronomy graduate program within one year of graduating. People with undergraduate degrees in physics pursue a variety of fascinating, fulfilling, and well-paying careers. This is evidenced by decades of data collected by the Statistical Research Center at the American Institute of Physics. Illustrated below are the common paths of physics bachelor’s degree recipients based on the most recent data. Unless otherwise indicated, all data are for graduates of US physics programs who remain in the United States.

Over 8,400 physics bachelor’s degrees were awarded in the class of 2015–16.

A record high! Typically...

- Three-fourths of those who earn physics bachelor’s degrees have research experience.
- One-third graduate with a double major, many in math.
- One-tenth start at two-year colleges.

Within one year of earning a physics bachelor’s degree...

- 30% enter the workforce.
  - Common employment sectors include:
    - Private sector
      - 2/3 of those who enter the workforce
      - Take jobs in the private sector
    - Of those that enter the private sector, the large majority hold science, technology, engineering, and math (STEM) positions.
    - Those in private-sector STEM positions are well compensated, with a median starting salary of about $57,000.
  - Colleges or universities
    - More than half of the students in these positions were employed at the same institution they graduated from. Many work in research or IT.

Civilian government

- The civilian government sector includes national labs. The vast majority of these positions are in STEM fields, many related to defense or energy.
  - Active military
    - Physics bachelor’s work across all branches of the armed forces. Many work in nuclear power.
  - High school teaching
    - About a quarter of the high school teachers indicated that their undergraduate degree had a high school physics teaching focus.

20% enroll in graduate programs other than physics or astronomy or in professional degree programs.

- About half enter an engineering program; the rest enter programs in math, medicine, education, or another field.
- As a group, physics majors score among the highest of all majors on medical school and law school admission tests (the MCAT and LSAT).
- Students in professional degree programs are more likely to be self-funded than students in research-based graduate programs, who usually have teaching assistantships, research assistantships, or fellowships.

The Statistical Research Center does not formally follow the career paths of these individuals, but we hear that they go on to successful careers in engineering, management, education, law, medicine, business, and a variety of other areas.

Add the mix:
Foreign citizens coming to the United States for a graduate degree, students who earned bachelor’s degrees in another field but want a graduate degree in physics, and students who earned a physics bachelor’s degree in previous academic years.

- 50% attend graduate school in physics or astronomy.
  - About 3/4 enroll in a PhD program
  - The remainder choose a master’s degree program.
  - Most are fully supported by teaching assistantships, research assistantships, or fellowships.

Of those who start graduate school in physics or astronomy...

- 1 out of 12 US physics bachelor’s recipients receive an exiting physics or astronomy master’s degree.
  - Exiting master’s degree recipients are individuals who leave their current department upon receiving a master’s degree. Many other students earn an en route master’s degree, continuing on to a physics PhD in the same department.
  - Over half of those who earn exiting master’s degrees do so with a specific research focus.
  - A master’s degree in physics usually takes about two years.

For US citizens, within one year of earning an exiting master’s degree...

- 1/2 continue with graduate studies.
  - Most transfer to other institutions in a PhD program.
  - Others transfer to programs in related fields such as materials science, engineering, medical physics, and mathematics.

- 1/2 accept a temporary position.
  - E.g., a position at a university or with the government.

- 40% accept a potentially permanent position.

- 3/4 of new PhDs accepting potentially permanent positions are employed in the private sector.
  - The median starting salary for new physics PhDs employed in the private sector is $69,000.

Employment sectors of physics PhDs 10–14 years since receiving their degree.

- 45% Private sector
- 45% with a specific research focus.
- 6% Government
- 6% Other

References and Notes
The following data were published by the Statistical Research Center of the American Institute of Physics and are available online at www.aip.org/statistics.

2. AIP Statistical Research Center, AIP Physics Trends: Research Expenditures of Physics Undergraduates, Fall 2009.
5. AIP Statistical Research Center: data from follow-up survey of physics bachelor’s, master’s, and PhDs, www.aip.org/statistics/employment.

*Estimate provided by the NSF Statistical Research Center, Spring 2014.

Learn more at the Careers Toolbox website: www.spsnational.org/careerstoolbox

Updated 12/2/2017
About 50% of Illinois Physics majors enter the workforce after graduation in a wide range of careers and sectors.
Post-Graduation

Employment (50%, $67k)

Accenture Consulting
Belvedere Trading
Chicago Tech Academy
CISCO Systems
CreateASoft
Crystal Lake Central HS
Elk Grove HS
Epic
Google
Green Line Engineering
HRL Labs
IBM
IMC Finance
Inservice Engineering
Intel
Jump Trading
JP Morgan Chase
Olenick & Associates
Qualcomm
Simplex Investments
Studio 222
Twitch LLC
U-Line Distributor
U.S. Army Core of Engineers
Viasat

...
Typical Salaries for 2017 Bachelor’s Degree Recipients

- Computer Science
- Electrical Engineering
- Aerospace Engineering
- **Physics**
- Mathematics
- Civil Engineering
- Accounting
- Registered Nursing
- Business Administration
- Chemistry
- Biology
- Astronomy

Starting Salary in Thousands

Illinois Physics grads

*Data adapted from National Association of Colleges and Employers Spring 2017 Survey*
Graduate School
About 50% of Illinois Physics majors enter a PhD program after graduation...but more diversity in disciplines compared with national average.
Graduate school gateway to:

- Postdoctoral research opportunities
- Higher paying job in industry & national labs
- Job in academia (i.e., becoming a professor)
# Post-Graduation

## Employment (50%, $67k)
- Accenture Consulting
- Belvedere Trading
- Chicago Tech Academy
- CISCO Systems
- CreateASoft
- Crystal Lake Central HS
- Elk Grove HS
- Epic
- Google
- Green Line Engineering
- HRL Labs
- IBM
- IMC Finance
- Inservice Engineering
- Intel
- Jump Trading
- JP Morgan Chase
- Olenick & Associates
- Qualcomm
- Simplex Investments
- Studio 222
- Twitch LLC
- U-Line Distributor
- U.S. Army Core of Engineers
- Viasat

## Graduate Schools (50%)

### Areas
- Physics
- Applied Physics
- Applied Statistics
- Architectural Acoustics
- Biomedical Engineering
- Computer science
- Electrical Engineering
- Finance
- Geophysics
- Journalism
- Law School
- Material Science
- Mathematics
- Neuroscience
- Nuclear Engineering
- Secondary Education

### Schools
- Caltech
- Colorado
- Cornell
- Florida
- Harvard
- Indiana
- Johns Hopkins
- Maryland
- Michigan
- Michigan State
- Minnesota
- MIT
- Northwestern
- Notre Dame

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### Additional Schools
- Ohio State
- Ohio University
- Oxford
- Penn State
- Princeton
- Stanford
- U Chicago
- UIUC
- University of California
- Virginia
- Washington
- Wisconsin
Resources

Engineering Career Services
https://www.aip.org/career-resources
https://jobs.spsnational.org/jobs/
https://jobs.physicstoday.org/
http://www.physics.org/careerprofiles.asp
https://www.gradschoolshopper.com/gradschool/