ATTENTION PHYSICS STUDENTS: 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 1% 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 physicists and engineers based on most recent data. Unless otherwise indicated, all data are for graduates of US physics programs who remain in the United States.

-50% attend graduate school in physics or astronomy
-35% of those who enter the workforce do so in private industry
-21% of those who complete graduate degrees do so in private industry
-1 out of 5 US physics bachelor's degrees is awarded to a female student
-40% accept a potentially permanent position
-1/2 accept a temporary position

Over 5,420 physics bachelor's degrees were awarded in the class of 2015-16.

Private sector
- 21% of those who enter the workforce do so in private industry
- Of those that enter the private sector, the large majority hold research, technology, engineering, and math (STEM) positions
- These in private-sector STEM positions are well compensated, with median starting salaries of about $70,000

Government
- More than half of the students in these positions were employed at the same institutions that granted them their bachelor's or master's degrees

Within one year of earning a physics bachelor's degree...
- 20% enroll in graduate programs other than physics or astronomy or in professional degree programs
  - About half in engineering, preparing the next elite engineers in medicine, education, or another field
  - About 1/4 in math, computer science, or related fields
  - About 1/4 in law or MBA

2/3 of those who are employed in a professional degree program are more likely to be well-handled than students who earn Bachelor's degrees in physics or astronomy

The Statistical Research Center does not formally follow the career paths of these individuals, but data show that they go on to successful careers in engineering, management, education, teaching, business, and a range of other fields.

Learn more at the Career Toolbox website:
www.spsnational.org/careerstoolbox
Occupation vs. College Degree

Which STEM BA/BS end up with STEM job?

In which careers do Physical Science BA/BS end up?

https://www.census.gov/dataviz/visualizations/stem/stem-html/
Physics jobs span the economy

Note: 47% of new physics bachelors were employed in the winter following the year in which they received their degree.

29% Phys/Astro grad school
10% Engineering grad school
10% other schooling
4% Unemployed

Figure 2. Initial employment of physics's bachelor's degree recipients for the combined classes of 2015 & 2016
Private Sector Job Areas – 1 Yr Post B.S.

Field of Employment for New Physics Bachelors Employed in the Private Sector, Classes of 2015 & 2016 Combined

- Engineering: 45%
- Computer or Information Systems: 27%
- Non-STEM, Regularly Solves Technical Problems: 15%
- Non-STEM, Rarely or Never Solves Technical Problems: 7%
- Other STEM: 4%
- Physics or Astronomy: 12%

www.aip.org/statistics

STEM refers to natural science, technology, engineering and mathematics. Regularly solving technical problems refers to respondents who selected “Daily”, “Weekly”, or “Monthly” on a four-point scale that also included “Rarely or Never”.

Figure 3. Employment data for physics bachelor’s degree recipients in the private sector. Note that Engineering and Computer Systems comprise 62% of the employment fields for bachelor’s working in the private sector.
Typical Job Skills Utilized

Knowledge and Skills Regularly Used by New Physics Bachelors Employed in the Private Sector, Classes of 2015 & 2016 Combined

<table>
<thead>
<tr>
<th>Skill</th>
<th>Employment in Engineering</th>
<th>Employment in Computer Science or Information Technology</th>
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<tbody>
<tr>
<td>Work on a Team</td>
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<td>Solve Technical Problems</td>
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<td>Technical Writing</td>
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<td>Design &amp; Development</td>
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<td>Perform Quality Control</td>
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<td>Use Specialized Equip.</td>
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<td>Programming</td>
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<td>Manage Projects</td>
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<tr>
<td>Knowledge of Phys. or Ast.</td>
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<tr>
<td>Simulation or Modeling</td>
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<td>Advanced Math</td>
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<tr>
<td>Work with Customers</td>
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<td>Manage People</td>
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<tr>
<td>Manage Budgets</td>
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</table>

Percent regularly using knowledge or skill
Typical Starting Salaries

Typical Starting Salaries for New Physics Bachelors, Classes of 2015 & 2016 Combined

- Private Sector STEM
  - Private Sector non-STEM, Regularly Solves Technical Problems
  - Private Sector non-STEM, Rarely or Never Solves Technical Problems
- Civilian Govt. (Incl. Natl. Labs)
- Active Military
- High School Teachers
- College or University

- $0
- $10
- $20
- $30
- $40
- $50
- $60
- $70
- $80

**Figure 6.** Typical Starting Salaries for New Physics Bachelors

Figure includes only bachelors in full-time, newly accepted positions. Typical salaries are in the middle 50% i.e., between the 25th and 75th percentiles. STEM refers to positions in natural science, technology, engineering and math. Regularly solving technical problems refers to respondents who selected “Daily”, “Weekly”, or “Monthly” on a four-point scale that also included “Rarely or Never” when asked how frequently they solved technical problems in their positions.

4-5 year old data: relative values likely still accurate

Private sector jobs tend to pay more upfront but other jobs, such as teaching, have other benefits.
Who hires physics bachelor’s?

- Washington Employers that recently hired new physics bachelor recipients (2014-2018 data)

https://www.aip.org/statistics/washington

AbVie
AeroTEC
Allen Institute for Brain Science
ALS Global
Amazon
Applied Motion Systems
Areva
Assemble Inc.
Battelle
Bluetooth SIG, Inc.
Boeing
BTownWeb
Carlisle IT - Tri Star
Casey Products
Chipton Ross
Corvus and Columba LLC
Dynetics, Inc.
Eagle Harbor Technologies, Inc.
Electroimpact, Inc.
Factset
Fidelity Investments
Fred Hutch Cancer Res Ctr
G.S. Builders
Google
HopeSource
HP Inc.
Inst. Defense Analyses
Inst. Environmental Health
Inst. Health Metrics & Eval.
Intellectual Ventures
Jacobs
Lease Crutcher Lewis
Leidos
Manufacturing Technology Inc.
Marchex, Inc.
Microsoft
Microvision
Mott MacDonald
Orbital ATK
Ozone International
Pacific Northwest National Laboratory
Pellego
Physio-Control Inc
Professional Credit Service
PSC Biotech
Puget Sound Energy
Radiant Vision Systems
RAFI USA
Raisbeck Engineering
Randstad
Scribe America
Seattle Children's Research Institute
Silicon Mechanics
Tableau Software
Tecplot Inc.
The Boeing Company
TigerStop
United States Navy
UT Austin
UW
UtiliQuest
Visiongate
VL Systems
WA State Dept of Transportation
Woodruff Sci. Computin
## Typical Job Titles 1 yr Post B.S.

### Engineering
- Systems Engineer
- Electrical Engineer
- Design Engineer
- Mechanical Engineer
- Project Engineer
- Optical Engineer
- Manufacturing Engineer
- Manufacturing Technician
- Laser Engineer
- Associate Engineer
- Technical Services Engineer
- Application Engineer
- Development Engineer
- Engineering Technician
- Field Engineer
- Process Engineer
- Process Technician
- Product Engineer
- Product Manager
- Research Engineer
- Test Engineer
- General Engineer

### Research & Technical
- Research Assistant
- Research Associate
- Research Technician
- Lab Technician
- Lab Assistant
- Accelerator Operator
- Physical Sciences Technician

### Computer Hardware / Software
- Software Engineer
- Programmer
- Web Developer
- IT Consultant
- Systems Analyst
- Technical Support Staff
- Analyst
- High School Physics Teacher
- High School Science Teacher
- Middle School Science Teacher
- Substitute Science Teacher
What resources are available for my job search?

• American Physical Society Careers Page
  – http://www.aps.org/careers/

• Society of Physics Students Careers Page
  – https://www.spsnational.org/career-resources

• AAAS (Science Magazine) Career Resources
  – http://www.sciencemag.org/careers/career-resources

• UW Career and Internship Center
  – http://careers.uw.edu/

• Faculty, Alumni, others in area
  – Today’s Career Panel
• **Alex Stevens**, B.S Physics/Astronomy UW 2011: Physics Teacher at Issaquah High

• **Marie Scott**, B.S. Physics UW 2016: Assistant Project Manager at Arcadis, a leading global natural and built asset design and consultancy firm.

• **Arielle Leon**, B.S Physics/Astronomy UW 2012: Software Engineer at the Paul Allen Institute for Brain Science

• **Kiana Rahni**: UW Career and Internship Center
SPS Jobs | jobs.spsnational.org
SPS Jobs has job listings appropriate for students seeking employment with a bachelor’s degree in physics.

Physics Today Job Resources | www.physicstoday.org/jobs/career_resources
SPS Career Resources | www.spsnational.org/career-resources
Visit this Society of Physics Students site for career-related information, including profiles of people working in different careers, advice, and links to related resources.

Click on a state to see a list of some of the employers that hired physics bachelor’s recipients recently in that state.

This link will take you to a report titled, “Physics Bachelor’s Initial Employment.” Figure 4 in this report shows the skills used by physics bachelor’s recipients in their first job. Use these lists when you are thinking about the knowledge and skills you have. Make sure these are highlighted in your resume.

APS Careers Website | www.aps.org/careers
Access a host of career resources at the APS Careers website, including links to the APS Webinar Archive, Career Workshops from annual meetings, links to a professional development guide, and info on Student Travel Awards and Future of Physics Days events at APS national meetings, specifically geared toward undergraduates.
What do Career Physicists Do?

BS (78,000)
- Life Science: 1%
- CS/Math: 13%
- Physical Sci: 14%
- Engr: 14%
- S&E Manager: 8%
- Technician: 9%
- Teach: 3%
- Other: 38%

MS (33,000)
- Life Science: 7%
- Other: 20%
- CS/Math: 17%
- Engr: 13%
- Physical Sci: 26%
- S&E Manager: 7%
- Technician: 7%
- Teach: 3%

PhD (64,000)
- Physical Sci: 53%
- Other: 14%
- S&E Manager: 3%
- Technician: 3%
- Engr: 11%
- Life Science: 6%
- CS/Math: 8%

Highest Degree
- BS Physics
  - MS Physics
  - PhD Physics