What do “Physicists” Do?

Bachelors
Masters
Doctorates

Physics Students Have Broad Interests
Most Common Double Majors of Physics Bachelors

- Mathematics
- Engineering
- Computer & Information Sciences
- Astronomy & Astrophysics
- Chemistry
- Philosophy & Theology
- Music & Fine Arts
- Biology
- Education & Teaching Certification
- History & Political Science
- Geosciences
- Economics

One-third of physics bachelors graduate with double majors.

Source: Senior (Undergraduate) Survey
Highest Degree Obtained by Physics Bachelors, Five to Seven Years After Degree

- 34% No Additional Degrees
- 25% Earned a Masters
- 24% Currently Enrolled in School
- 12% Earned a PhD
- 5% Earned Other Degrees

Source: 1998 Bachelors Plus Five Study
Status One Year After Earning a Physics Bachelor’s, Classes of 2009 & 2010 Combined

Graduate Study

<table>
<thead>
<tr>
<th>Field</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physics &amp; Astronomy</td>
<td>36%</td>
</tr>
<tr>
<td>Other Fields</td>
<td>24%</td>
</tr>
<tr>
<td>Employment</td>
<td>35%</td>
</tr>
<tr>
<td>Unemployment</td>
<td>5%</td>
</tr>
</tbody>
</table>

(N=4,219)

http://www.aip.org/statistics
Initial Employment Sectors of Physics Bachelor’s, Classes of 2009 & 2010 Combined

- Private Sector: 53%
- College & University: 13%
- High School: 11%
- Civilian Gov’t, National Lab: 10%
- Active Military: 8%
- Other: 5%

http://www.aip.org/statistics
Field of Employment for Physics Bachelor’s in the Private Sector, Classes of 2009 & 2010 Combined

- Engineering: 32%
- Computer or Information Systems: 21%
- Other STEM: 16%
- Non-STEM: 26%
- Physics or Astronomy: 5%

STEM refers to natural Science, Technology, Engineering, and Mathematics.

http://www.aip.org/statistics
Predominant Work Activities
Recent Physics Bachelors

Private Sector
STEM
Design & Development
Programming, Simulation & Modeling
Quality Control

Private Sector
Non STEM
Management & Administration
Financial & Legal Services
Sales & Marketing

Civilian Government
Applied Research
Basic Research
Design & Development

Predominant means over 50% of the work activities in each of the sectors. STEM refers to positions in Science, Technology, Engineering and Math.

Source: AIP Follow-up survey of physics bachelor's classes of 2003 & 2004
Knowledge and Skills Regularly Used by Physics Bachelor’s Employed in the Private Sector, Classes of 2009 & 2010 Combined

Employment in Engineering

- Solve Technical Problems
- Work on a Team
- Technical Writing
- Knowledge of Phys. or Ast.
- Perform Quality Control

Employment in Computer Science or Information Technology

- Use Specialized Equip.
- Design & Development Programming
- Manage Projects
- Work with Customers
- Advanced Math
- Simulation or Modeling
- Computer Admin.
- Manage People
- Manage Budgets

Percent

Percentages represent the physics bachelor’s who chose "daily", "weekly", or "monthly" on a four-point scale that also included "never or rarely".

http://www.aip.org/statistics
What's a Bachelor's Degree Worth?
Typical Salary Offers by Campus Recruiters, AY 2008-09

Bachelor's Field
- Chemical Engineering
- Computer Science
- Electrical Engineering
- Physics
- Mechanical Engineering
- Mathematics
- Civil Engineering
- Finance
- Nursing
- Accounting
- Marketing
- Chemistry
- Secondary Education
- Psychology
- Biology / Lifescience

Typical Starting Salaries for Physics Bachelor's Classes of 2009 & 2010 Combined

- Employer
  - Private Sector STEM
  - Civilian Govt. incl. Natl. Labs
  - Private Sector non-STEM
  - Active Military
  - High School Teachers
  - College or University

Starting Salary in Thousands

Figure includes only bachelor's in full-time, newly accepted positions.

Typical salaries are the middle 50%, i.e. between the 25th and 75th percentiles. STEM refers to positions in natural Science, Technology, Engineering, and Math.

http://www.aip.org/statistics
Job Satisfaction of 2009, 2010 Physics Bachelor’s

Private Sector STEM
- Job Security
- Level of Responsibility
- Opportunity for Advancement
- Salary and Benefits
- Intellectual Challenge
- Overall

Private Sector Non-STEM
- Job Security
- Level of Responsibility
- Opportunity for Advancement
- Salary and Benefits
- Intellectual Challenge
- Overall

High School Teaching
- Salary and Benefits
- Level of Responsibility
- Job Security
- Opportunity for Advancement
- Intellectual Challenge
- Overall

Military
- Salary and Benefits
- Level of Responsibility
- Job Security
- Opportunity for Advancement
- Intellectual Challenge
- Overall
Employers in California that recently hired new physics bachelor recipients
Active Life Technologies
Aero Jet
AerospaceComputing, Inc.
Aerotek
Agilent Technologies
AGR, LLC
ALPOGO Air Conditioning
Amgen, Inc.
Apple, Inc.
Areias Systems, Inc.
Arete Associates
Arlon-M.E.D.
Arrowhead General Insurance Agency
Asbestos TEM Labs
BAE Systems
Boeing
Business Researchers, Inc.
California Analytical Instruments
Calliope
Continental DataGraphics
Deluxe Digital Camera
E&M Electric
E2 Manage Tech, Inc.
Eberline Services
Electronic Arts
Electro-Optical Industries
Energy and Environmental Economics, Inc.
ESolar, Inc.
Fire Cause Analysis
Fiserv FSC Insurance
Five Point Capital
Flowroute, LLC
General Atomics
Gotama Building Engineers
GreenVolts
Havok
HR Textron
IBM Almaden Research Center
Idealab
Illumina, Inc.
Impulse Devices
Information Systems Professionals (Ispro)
Intel Corporation
Status One Year After Earning a Physics Bachelor’s, Classes of 2009 & 2010 Combined

Graduate Study

- Physics & Astronomy: 36%
- Other Fields: 24%
- Employment: 35%
- Unemployment: 5%

(N=4,219)

http://www.aip.org/statistics
Fields of Study for Physics Bachelor’s Continuing Directly Onto Graduate Study, Classes of 2009 & 2010 Combined

- Physics or Astronomy: 61%
- Engineering: 19%
- Other: 20%

(N=2,436)

http://www.aip.org/statistics
Courses Required for a Physics PhD or Masters
Percent of Departments

- Quantum Mechanics: 91%
- Electromagnetism: 89%
- Statistical Mechanics: 85%
- Classical Mechanics: 77%
- Mathematical Methods: 54%
- Laboratory Techniques: 24%
- Other: 24%

“Other” courses include: Advanced Topics, Astronomy, Computational Physics, Elementary Particle Physics, Introductory Astrophysics, and Modern Physics.

Physics Masters 1 Year Later

500 Masters Degrees

75%

Employment
155 Private Sector
70 College & University
50 High School
35 Government
40 Active Military
25 Other

Graduate School
75 Physics & Astronomy
10 Engineering
40 Other

Data reflect masters who are leaving their current department in a given year.
The outcomes for the 300 non-US citizens who received physics master's degrees was the reverse of what is shown for the US students, with 25% entering the work force and 75% continuing their graduate studies at another department.

Masters Starting Salaries
Physics Masters Classes of 2002 & 2003

Employer

Industry
College or University

Typical Salaries (in Thousands of Dollars)

Typical salaries are the middle 50%, i.e., between the 25th and 75th percentiles.
There were too few respondents in the categories of High School, Active Military, and Civilian Government to accurately report salaries.

Source: Initial Employment Survey.
What Do High School Physics Teachers Teach?

Recently Hired Teachers with Physics Degrees

- 39% Exclusively Physics
- 34% Mostly Physics
- 27% Some Physics

Other Subjects:
- Math
- Physical Science
- Chemistry
- Biology
- Applied Science

The average teaching load is 5 classes per term.

Source: AIP High School Physics Teacher Survey, 2005
Physics PhD
How Long Does it Take?

This graph depicts the number of full-time equivalent years of physics graduate study completed by the PhD class of 2004. US Citizens only.
Primary Types of Support for Physics Bachelor's Immediately Pursuing Graduate Study, Classes of 2009 & 2010 Combined

Graduate Study in Physics or Astronomy

<table>
<thead>
<tr>
<th>Degree Program Enrolled</th>
<th>Master's (N=224)</th>
<th>PhD (N=828)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>39</td>
<td>53</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>21</td>
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<td>25</td>
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Graduate Study in Engineering

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<tr>
<th>Degree Program Enrolled</th>
<th>Master's (N=205)</th>
<th>PhD (N=120)</th>
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<td></td>
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<td>18</td>
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<tr>
<td></td>
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<td>48</td>
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<td>32</td>
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<td></td>
<td>38</td>
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</table>

Graduate Study in Other Fields*

<table>
<thead>
<tr>
<th>Degree Program Enrolled</th>
<th>Master's (N=126)</th>
<th>PhD (N=101)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>25</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>18</td>
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<td>22</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>46</td>
<td>5</td>
</tr>
</tbody>
</table>

Percent

- Teaching Assistant
- Fellowships & Scholarships
- Research Assistant
- Self-Funded

*Does not include professional degree fields such as law and medicine.

http://www.aip.org/statistics

Percent

- Applied Physics
- Materials Science
- Optics & Photonics
- Condensed Matter
- Plasma & Fusion
- Particles & Fields
- Nuclear Physics
- Biological Physics
- Astronomy & Astrophysics
- Atomic & Molecular

Data only include U.S.-educated physics PhDs who remained in the U.S. after earning their degrees.

http://www.aip.org/statistics
Physics PhDs Starting Salaries, Classes of 2009 & 2010.

**Potentially Permanent Positions**

- Private Sector (N=91)
- Government Lab (N=25)
- University & 4-Year College (N=38)

**Postdocs**

- Government Lab (N=95)
- University & UARI (N=371)

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**PhD Salaries 10 Years Later**

(2007 data)

<table>
<thead>
<tr>
<th>Place of Employment</th>
<th>Typical Salaries in Thousands</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital, Medical Services</td>
<td></td>
</tr>
<tr>
<td>Government</td>
<td></td>
</tr>
<tr>
<td>Industry or Self-Employed</td>
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</tr>
<tr>
<td>Federally-Funded R&amp;D Center</td>
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<tr>
<td>University Research Institute</td>
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<tr>
<td>University, 11-12 month</td>
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<tr>
<td>University, 9-10 month</td>
<td></td>
</tr>
<tr>
<td>4-Year College, 9-10 month</td>
<td></td>
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</tbody>
</table>
Scientific and Technical Knowledge Regularly Used by New Physics PhDs, Classes of 2009 & 2010 Combined

Percentages represent the proportion of physics PhDs who chose “daily”, “weekly” or “monthly” on a four-point scale that also included “never or rarely”. Data only include U.S.-educated physics PhDs who remained in the U.S. after earning their degrees.

http://www.aip.org/statistics
Interpersonal and Management Skills Regularly Used by New Physics PhDs, Classes of 2009 & 2010 Combined

Percent Who Use Regularly

Percentages represent the proportion of physics PhDs who chose “daily”, “weekly” or “monthly” on a four-point scale that also included “never or rarely”. Data only include U.S.-educated physics PhDs who remained in the U.S. after earning their degrees.

http://www.aip.org/statistics
Look for your self

http://careers.aps.org/search/browse/

Note: “advanced search” tab allows you to limit your search by degree earned.