Physics and Astronomy Majors: 
Who are they? And Where are they going?

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Primetime
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Outline

• Undergraduate Education and after…
• Graduate Education and after…
• Employments
• Salaries
Undergraduate Education and after...
Undergraduate Education: What is Important for Employment?

Importance of knowledge and skills for physics bachelors, 5 - 7 years after degree

Primary Field of Employment

- Engineering, Math & Science
- Software

- Scientific problem solving
- Synthesizing information
- Mathematical skills
- Physics principles
- Lab or instrumentation skills
- Scientific software
- Knowledge of physics
- Modeling or simulation
- Product design
- Computer programming
- Software development

Percent “Very Important”

Percentage of physics bachelors who chose 4 or 5 on a 5-point scale where 5 = essential.

Percent of Bachelor’s Degrees Earned by Women in Selected Fields (1975-1997)

Source: Women in Physics, June 2000
<table>
<thead>
<tr>
<th>Type of Job</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software</td>
<td>28</td>
</tr>
<tr>
<td>Engineering</td>
<td>17</td>
</tr>
<tr>
<td>Science &amp; Lab Technician</td>
<td>10</td>
</tr>
<tr>
<td>Management, Owner &amp; Finance</td>
<td>19</td>
</tr>
<tr>
<td>Education</td>
<td>12</td>
</tr>
<tr>
<td>Active Military</td>
<td>5</td>
</tr>
<tr>
<td>Service and Other Non-Technical</td>
<td>9</td>
</tr>
</tbody>
</table>

Type of employment of physics bachelors 5 to 7 years after earning their degrees, 1999.

Source: 1998 Bachelors Plus Five Study
Highest Degree Obtained by Physics Bachelors
Five to Seven Years After Degree

Source: 1998 Bachelors Plus Five Study
Graduate Education and after...
How Long Does It Take to Get a Physics Ph.D.?  

This graph depicts the number of full time equivalent years of graduate study completed by the PhD class of 2000. 

Source: Initial Employment Report
Primary Source of Support for Physics Doctoral Students

Source: Graduate Student Report, July 1999
### Number of Ph.D.s Granted in Selected Subfields (1999)

<table>
<thead>
<tr>
<th>Field</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condensed Matter Physics</td>
<td>308</td>
</tr>
<tr>
<td>Atomic, Molecular &amp; Optics</td>
<td>196</td>
</tr>
<tr>
<td>Elementary Particles</td>
<td>169</td>
</tr>
<tr>
<td>Astronomy &amp; Astrophysics</td>
<td>160</td>
</tr>
<tr>
<td>Nuclear Physics</td>
<td>76</td>
</tr>
<tr>
<td>Plasma and Fluid Dynamics</td>
<td>72</td>
</tr>
<tr>
<td>Polymer Physics</td>
<td>28</td>
</tr>
<tr>
<td>Acoustics</td>
<td>16</td>
</tr>
<tr>
<td>Other Physics</td>
<td>406</td>
</tr>
<tr>
<td><strong>All Physics &amp; Astronomy</strong></td>
<td><strong>1431</strong></td>
</tr>
</tbody>
</table>

Source: National Science Foundation, Survey of Earned Doctorates
Employment
### Who is Hiring Physics Bachelors?

#### Companies that Hired Multiple Physics Bachelors (Nationwide)

<table>
<thead>
<tr>
<th>Companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>3M, Accenture (formerly Anderson Consulting), Boeing</td>
</tr>
<tr>
<td>Cisco Systems, Corning, Inc., Electro Scientific Industries (ESI)</td>
</tr>
<tr>
<td>Hewlett-Packard, IBM, Intel, Level 3 Communications</td>
</tr>
<tr>
<td>Lockheed Martin, LSI Logic Corporations, Lucent Technologies</td>
</tr>
<tr>
<td>Microsoft, Motorola, National Instruments, Qwest International</td>
</tr>
<tr>
<td>Raytheon, Schlumberger, Sprint, Teradyne Corporation</td>
</tr>
<tr>
<td>TRW, Inc., Verizon Wireless</td>
</tr>
<tr>
<td>Wolf Creek Nuclear Operations Corporation</td>
</tr>
</tbody>
</table>
Companies that Recently Hired Physics Bachelors
(New York State)

Accenture (formerly Anderson Consulting), Adecco TAD Technical, Agora Gallery
American Axle & Manufacturing, Analytical Spectral Devices, AQR, AT Kearney
Aurora Systems, Banc America Securities, Bausch & Lomb, Bell Atlantic
bigchalk.com, Bloomberg, LP, Broadmark Capital, Cambridge Pharma Consultancy
Connect Systems, Inc., Corning, Inc., Distinctive Displays, Eastman Kodak Company
Entergy, Eraser Company, Fleet Libris Information Solutions, IBM
Level 3 Communications, LEX America, Lockheed Martin, Marakon Associates
Niagara Mohawk Power Company, NLX Corporation, Oliver, Wyman & Company
Pegasystems, Inc, Photon Research Associates, PLUG Power, Register.com
RiskMetrics, Robotti & Company, Semiconductor Laser International Corporation
Springer-Verlag, SteinMart, Stern, Stewert & Company, Telcom Staffing
Veramark Tech., Veridian Engineering, Wall Street Services, Xerox
### Ph.D.’s Initial Employment

<table>
<thead>
<tr>
<th>Dissertation Subfield</th>
<th>Permanent &amp; Potentially Permanent Positions</th>
<th>Postdoctoral Appointments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optics &amp; Photonics</td>
<td>66</td>
<td>30</td>
</tr>
<tr>
<td>Atomic &amp; Molecular</td>
<td>52</td>
<td>43</td>
</tr>
<tr>
<td>Condensed Matter</td>
<td>52</td>
<td>43</td>
</tr>
<tr>
<td>Nuclear Physics</td>
<td>50</td>
<td>40</td>
</tr>
<tr>
<td>Materials Science</td>
<td>50</td>
<td>36</td>
</tr>
<tr>
<td>Atmospheric &amp; Space Physics</td>
<td>45</td>
<td>49</td>
</tr>
<tr>
<td>Particles &amp; Fields</td>
<td>34</td>
<td>59</td>
</tr>
<tr>
<td>Astronomy &amp; Astrophysics</td>
<td>31</td>
<td>60</td>
</tr>
</tbody>
</table>

Percent

These data describe a Ph.D.'s employment, six months after graduation, by dissertation field. Those working in other temporary positions are not shown.

Type of US employment secured by physics PhDs in the winter following their degree

*In 1991, the survey questionnaire was changed to measure "other temporary" employment as a separate category.

Physicists’ Salaries
Median Starting Salaries:
Physics Bachelors Class of 1998

- Industry: $40,000
- Civilian Government: $37,000
- High School: $30,000
- Active Military: $30,000
- College or University: $27,000

Source: 1999 Initial Employment Report
Average Salaries Offered by Campus Recruiters to New Bachelors in Selected Majors (2000)

- Computer Engineering: $50,200
- Computer Science: $49,100
- Chemical Engineering: $48,900
- Electrical Engineering: $48,600
- Mechanical Engineering: $46,000
- Physics: $42,500
- Mathematics: $41,800
- Civil Engineering: $37,900
- Finance and Economics: $37,800
- Accounting: $36,700
- Chemistry: $35,900
- Political Science: $32,400
- Communications: $30,500
- Life Sciences: $29,100
- Psychology: $28,800
- Secondary School Teacher: $26,500

Source: National Association of Colleges and Employers
Median Starting Salaries: Physics Ph.D.s Class of 1998

- **Industry**: $62,700
- **Government Postdoc**: $47,900
- **College or University**: $38,000
- **University Postdoc**: $35,000

Source: 1999 Initial Employment Report
Typical Salaries for Ph.D. Physicists Early in Their Careers (2000)

Salary in Thousands of Dollars

- FFR&DC
- Industry
- Federal Government
- University, 11-12 months
- University, 9-10 months

Typical salary ranges for PhDs who have worked for less than five years

- FFR&DCs are Federally Funded Research and Development Centers.
- Some university salaries are for a full year of work, while others are paid only for the 9 to 10 month academic year.

Source: 2000 Salary Report
## Faculty Salaries

<table>
<thead>
<tr>
<th>Salary Type</th>
<th>Full Professor</th>
<th>Associate Professor</th>
<th>Assistant Professor</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNIVERSITY 12 month salary</td>
<td>$114,000</td>
<td>81,700</td>
<td>61,000</td>
</tr>
<tr>
<td>UNIVERSITY 9 month salary</td>
<td>87,000</td>
<td>59,600</td>
<td>49,100</td>
</tr>
<tr>
<td>FOUR-YEAR COLLEGE 9 month salary</td>
<td>67,800</td>
<td>50,500</td>
<td>42,300</td>
</tr>
</tbody>
</table>

Source: 2000 Salaries - Society Membership Survey
November 28, 2000

Dear Career and Professional Development Liaison,

Over the last several months, we have received far too many inquiries from students and faculty reflecting the misperception that the job market for physicists continues to languish. It does not. In fact, the current job prospects for physics graduates at all degree levels are the best we have seen in 10 years or more.

- Director, AIP Statistical Research Center
Useful Websites for Career and Professional Development

- AIP (American Institute of Physics) Employment Trend page

- AIP Statistical Research Center
  - http://www.aip.org/statistics/

- Department CPDL (Career and Professional Development Liaison) page
  - http://superk.physics.sunysb.edu/~alpinist/CPDL.html

- A Career in High School Teaching

- Stony Brook Case Study