Possible jobs for the Physics major

Or: I may not want to be stuck in a University for the rest of my life
Physics Bachelor’s 1 Year Later

5760 Bachelor’s Degrees

44%
Employment
1210 Private Sector
280 College & University
240 High School Teaching
160 Active Military
130 Government
160 Other
340 Unemployed, seeking

56%
Graduate School
1890 Physics & Astronomy
630 Engineering
320 Other Science & Math
140 Medicine & Law
140 Education
100 Other

Highest Degree Obtained by Physics Bachelors, Five to Seven Years After Degree

<table>
<thead>
<tr>
<th>Field of Additional Degree</th>
<th>No Additional Degrees</th>
<th>Earned a Masters</th>
<th>Currently Enrolled in School</th>
<th>Earned a PhD</th>
<th>Earned Other Degrees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physics &amp; Astronomy</td>
<td>34%</td>
<td>25%</td>
<td>24%</td>
<td>12%</td>
<td>5%</td>
</tr>
<tr>
<td>Other Science &amp; Engineering</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Science</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: 1998 Bachelors Plus Five Study
Two possible routes

Advanced degree
- Master’s and/or PhD
- Grad School
- Professional research
  - Professor
  - Other research

Job right after Bachelor’s degree
- A job is not a career
- Your first job will likely not be your only job
Initial Employment Sectors of Physics Bachelor’s, Classes of 2011 & 2012 Combined.

Private Sector: 61%
College & University**: 13%
High School: 8%
Other: 7%
Active Military*: 6%
Civilian Gov’t, National lab: 5%

*Data does not include degree recipients from the three military academies (US Naval Academy, US Military Academy, US Air Force Academy).

** Data include two- and four-year colleges, universities, and university affiliated research institutes.
Field of Employment for Physics Bachelor’s in the Private Sector, Classes of 2011 & 2012 Combined.

- Engineering: 30%
- Non-STEM: 30%
- Computer or Information Systems: 24%
- Other STEM: 13%
- Physics or Astronomy: 3%

STEM refers to natural science, technology, engineering, and mathematics.

http://www.aip.org/statistics
Employers in California that Recently Hired New Physics Bachelor Recipients

- 2K Games
- Aberdeen Proving Lab
- AOR, Inc.
- APV Research
- Arete Associates
- Art of Problem Solving
- Avanade
- Beckman Coulter
- Beckman Research Institute at City of Hope
- Boeing
- Capitol Door Service
- Centrillion Biosciences
- Cisco
- Euclid Elements
- Facebook
- Flowline
- Fuse Interactive
- Gamma Medica-Ideas
- General Atomics Aeronautical Systems, Inc.
- Google
- Guided Discoveries, Inc.
- Haas Automation
- Harris Miller Miller & Hanson, Inc
- Hitachi GST
- Illumina, Inc.
- Intel Labs

https://www.aip.org/statistics/california
What Do High School Physics Teachers Teach?

Variation in Non-Physics Classes Taught
By Type of Physics Teacher, 2012-13

- Specialist
- Career
- Occasional
- Apprentice
- Newcomer

www.aip.org/statistics
Preparation for the Job Search

1. Take one burden off your back
   - Relax

2. Make the acquaintance of alumni from your department.
   - Get to know upperclassmen
   - Invite alumni to visit.

3. Make choices that will set you apart.
Set yourself apart

• A physics degree with a solid GPA is the first step.

• Develop other skills
  – Computer programming, writing, communication
  – Second language, business course

• Do an internship
  – Or, arrange for a shadowing experience or do independent research
Research Experiences of Physics Undergraduates

Working with a professor on a project 54%

As part of a thesis project 40%

Research Experience for Undergraduates (REU-funded by the National Science Foundation) 23%

At a National Lab 10%

A co-op or internship 7%

None 26%

The total adds to more than 100% as seniors were permitted to indicate more than one type of research experience.

Source: AIP Statistical Research Center, Senior Survey.
PhD

- Research Degree
- Grad School in Physics, Astronomy, Engineering most common
- Takes an average of six years to complete
- Two years for a master’s degree
- Most PhD education is funded
- If interested, should get BS not BA
- Undergraduate research important
- GRE exam very important for some schools
## UC Davis Admission Standards

<table>
<thead>
<tr>
<th>Year</th>
<th>Undg GPA</th>
<th>GRE-Verbal</th>
<th>GRE-Quant</th>
<th>GRE-Anal</th>
<th>GRE-Physics</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>3.54</td>
<td>81.8</td>
<td>86.6</td>
<td>59.8</td>
<td>56.1</td>
</tr>
<tr>
<td>2006</td>
<td>3.63</td>
<td>74.8</td>
<td>86.0</td>
<td>61.9</td>
<td>69.0</td>
</tr>
<tr>
<td>2005</td>
<td>3.54</td>
<td>73.1</td>
<td>81.4</td>
<td>65.8</td>
<td>52.0</td>
</tr>
<tr>
<td>2004</td>
<td>3.57</td>
<td>74.9</td>
<td>84.1</td>
<td>73.3</td>
<td>46.1</td>
</tr>
<tr>
<td>2003</td>
<td>3.51</td>
<td>75</td>
<td>84</td>
<td>74</td>
<td>47</td>
</tr>
<tr>
<td>2002</td>
<td>3.56</td>
<td>68</td>
<td>85</td>
<td>75</td>
<td>43</td>
</tr>
<tr>
<td>2001</td>
<td>3.44</td>
<td>70</td>
<td>85</td>
<td>66</td>
<td>35</td>
</tr>
<tr>
<td>2000</td>
<td>3.42</td>
<td>63</td>
<td>82</td>
<td>68</td>
<td>36</td>
</tr>
<tr>
<td>1999</td>
<td>3.51</td>
<td>77</td>
<td>88</td>
<td>83</td>
<td>46</td>
</tr>
<tr>
<td>1998</td>
<td>3.43</td>
<td>62</td>
<td>88</td>
<td>72</td>
<td>46</td>
</tr>
<tr>
<td>1997</td>
<td>3.53</td>
<td>76</td>
<td>87</td>
<td>79</td>
<td>49</td>
</tr>
<tr>
<td>1996</td>
<td>3.42</td>
<td>74</td>
<td>87</td>
<td>78</td>
<td>45</td>
</tr>
<tr>
<td>1995</td>
<td>3.54</td>
<td>73</td>
<td>89</td>
<td>78</td>
<td>49</td>
</tr>
<tr>
<td>91-95</td>
<td>3.49</td>
<td>87</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Five Year Averages

| All Domestic | 3.56 +/- 0.35 | 71.5 +/-20 | 84.3+/-10 | 65.7+/-25 | 51.2+/-25 |
## Enrollment and Acceptance Rates:

### 2007 Accept Rate = 39% (33/89)

### Five Year Averages:

|     | A: 33% | B: 49% |

<table>
<thead>
<tr>
<th>Year</th>
<th>CA Enroll</th>
<th>CA Admit</th>
<th>CA Apply</th>
<th>Dom. Enroll</th>
<th>Dom. Admit</th>
<th>Dom. Apply</th>
<th>For. Enroll</th>
<th>For. Admit</th>
<th>For. Apply</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>10</td>
<td>31</td>
<td>52</td>
<td>16</td>
<td>45</td>
<td>88</td>
<td>7</td>
<td>13</td>
<td>159</td>
</tr>
<tr>
<td>2006</td>
<td>6</td>
<td>32</td>
<td>71</td>
<td>3</td>
<td>20</td>
<td>80</td>
<td>3</td>
<td>14</td>
<td>106</td>
</tr>
<tr>
<td>2005</td>
<td>15</td>
<td>32</td>
<td>57</td>
<td>8</td>
<td>27</td>
<td>52</td>
<td>8</td>
<td>19</td>
<td>87</td>
</tr>
<tr>
<td>2004</td>
<td>20</td>
<td>37</td>
<td>55</td>
<td>11</td>
<td>32</td>
<td>39</td>
<td>5</td>
<td>13</td>
<td>94</td>
</tr>
<tr>
<td>2003</td>
<td>16</td>
<td>27</td>
<td>30</td>
<td>9</td>
<td>28</td>
<td>36</td>
<td>0(3)</td>
<td>0(3)</td>
<td>51(54)</td>
</tr>
<tr>
<td>2002</td>
<td>8</td>
<td>28</td>
<td>35</td>
<td>1(4)</td>
<td>10(13)</td>
<td>31</td>
<td>5(9)</td>
<td>13(18)</td>
<td>44</td>
</tr>
<tr>
<td>2001</td>
<td>8(17)</td>
<td>16(27)</td>
<td>34</td>
<td>2</td>
<td>10</td>
<td>21</td>
<td>4</td>
<td>23</td>
<td>47</td>
</tr>
<tr>
<td>2000</td>
<td>12</td>
<td>22</td>
<td>24</td>
<td>6</td>
<td>23</td>
<td>25</td>
<td>4</td>
<td>10</td>
<td>38</td>
</tr>
<tr>
<td>1999</td>
<td>5</td>
<td>17</td>
<td>19</td>
<td>5</td>
<td>19</td>
<td>24</td>
<td>9</td>
<td>18</td>
<td>61</td>
</tr>
<tr>
<td>1998</td>
<td>11</td>
<td>21</td>
<td>24</td>
<td>3</td>
<td>25</td>
<td>32</td>
<td>6</td>
<td>13</td>
<td>36</td>
</tr>
<tr>
<td>1997</td>
<td>7</td>
<td>19</td>
<td>30</td>
<td>4</td>
<td>19</td>
<td>25</td>
<td>1</td>
<td>1</td>
<td>74</td>
</tr>
<tr>
<td>1996</td>
<td>11</td>
<td>21</td>
<td>31</td>
<td>2</td>
<td>12</td>
<td>19</td>
<td>2</td>
<td>2</td>
<td>47</td>
</tr>
<tr>
<td>1995</td>
<td>6</td>
<td>13</td>
<td>29</td>
<td>2</td>
<td>18</td>
<td>27</td>
<td>0</td>
<td>0</td>
<td>38</td>
</tr>
</tbody>
</table>

|     | 2007 Rate | 32% | 60% | 36% | 51% | 54% | 08% |
|     | 02-06 Ave | 42% | 62% | 29% | 50% | 36% | 18% |
The Application Packet – Increasing Your Success Rate:

• Grades – GPA
  • GPA in Major
  • GPA from two schools
• Standardized Tests – GRE, TOFEL
  • GRE – Quantitative
  • GRE – Verbal
  • GRE – Analytical Writing
  • GRE – Subject Test
• Letters of Recommendation
  • Best are from physics faculty
• Personal Statement
  • 1-2 pages – no small fonts
  • State your goals, state your strengths
  • Explain anything unusual
• Contacts – School Visits
Who Reads Your Packet?
  • Busy Faculty
  • NOT administrators
  • Specialists in your intended research area

Maximizing Success:
  • Apply to the right schools
  • Do your Homework on to which school to apply
  • Talk to the faculty at your home institution
  • Apply to 3-5 Schools
Years of Physics Graduate Study to Receive a PhD, Classes of 2007 & 2008 Combined.

Note: This graph depicts the number of full-time equivalent years of physics graduate study completed in the US. Includes US citizens only.

http://www.aip.org/statistics
Number of Physics PhDs Granted by Subfield From Physics Departments, Classes of 2010 & 2011 Combined.

Note: These data are based on a 2 year average of 1,623 PhDs conferred by U.S. physics departments. Additionally, there was an average of 158 PhD astronomers from departments that offer astronomy degrees.

http://www.aip.org/statistics
Starting Salaries for Physics PhDs, Classes of 2011 & 2012 Combined

**Potentially Permanent Positions**

- Government Lab (N=17)
- Private Sector (N=127)
- University & 4-year College (N=42)

**Postdocs**

- Government Lab (N=86)
- University & UARI (N=386)

Typical Salaries in Thousands of Dollars

Data only include US-educated PhDs who remained in the US after earning their degrees. The ranges of salaries represent the middle 50% i.e. between the 25th and 75th percentiles. Government Lab includes Federally Funded Research and Development Centers, e.g. Los Alamos National Laboratory. UARI is University Affiliated Research Institute. The data for PhDs holding potentially permanent positions in academia include salaries based on the 9-10 and 11-12 month commitments. “N” represents the number of individuals who were full-time employed and provided salary data.

http://www.aip.org/statistics

PhD Salaries 10 Years Later

Typical PhD Physicists Salaries by Career Type, 2011
10 – 15 Years after Degree
Data show middle 50% of respondents

Typical Salaries in Thousands of Dollars

Data include US-educated physicists who earned their PhDs 10 – 15 years earlier and were working full-time in the US in 2013.

PhD Plus 10 Study – www.aip.org/statistics
Preparing to seek your first job

1. Series of questions for self-assessment
2. Identify your own skills
3. Determine what you value in a job
4. Reflect on a list of assets identified by physicists in industry
Self-assessment

1. Do I have overarching goals?
2. Do I want my life’s story to be told through my own accomplishments or through my influence on others?
3. Do I want my personal accomplishments to have tangible form?
4. Do I want to be a generalist or specialist?
Other questions

• What do I enjoy doing?
• What are my personal strengths/weaknesses?
• What are my technical skills and experiences?
• What are my non-technical skills and experiences?
• Am I better at starting a project or at follow-through?
• Am I more a leader or a follower?
• Am I an idea person or a detail person?
• Am I a people person?
• Do I prefer a task where I work alone or with others?
• What is important to me – Money? Job Satisfaction? Prestige?
• Am I willing to relocate?
• What types of positions or responsibilities/dues are not acceptable?
• What are my salary needs?
Knowledge and Skills Regularly Used by Physics Bachelor’s Employed in the Private Sector, Classes of 2011 & 2012 Combined.

- Solve Technical Problems
- Work on a Team
- Technical Writing
- Design & Development
- Use Specialized Equip.
- Perform Quality Control
- Manage Projects
- Knowledge of Phys. or Ast.
- Programming
- Work with Customers
- Advanced Math
- Simulation or Modeling
- Manage People
- Manage Budgets

Employment in Engineering

Employment in Computer Science or Information Technology

Communication and People Skills

Percentage of physics bachelors who spend a large amount of time on the following work activities, 5-7 years after earning their degrees

- Working with Co-Workers
- Client Services
- Managing Projects
- Technical Writing
- Making Presentations
- Non-Technical Writing
- Supervising Others
- Training People

http://www.aip.org/statistics

Source: 1998-99 Bachelors Plus Five Study