Creating Effective Resumes

For Non-Academic Physics Careers

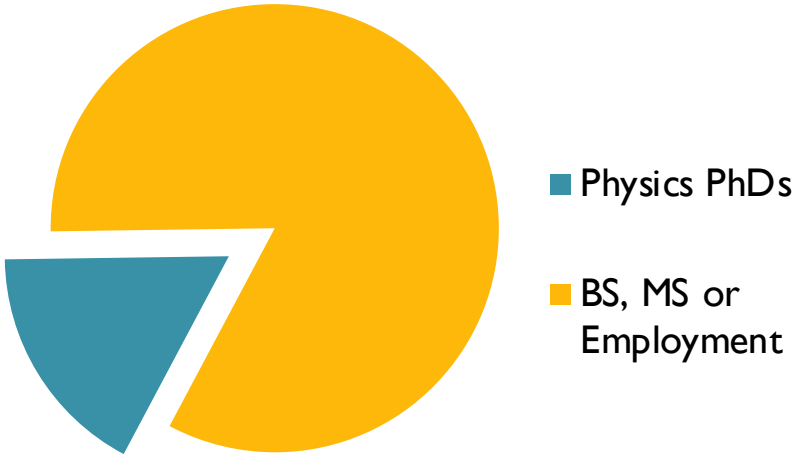
Crystal Bailey, PhD
American Physical Society

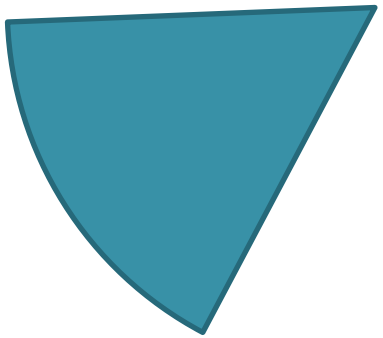
Where do Physicists Work?

Not where you think!

What is a "traditional physicist"? A physics professor? A PhD researcher? The "most common" career path?

The AIP Statistical Research Center estimates that 1 in 6 physics bachelors will choose to finish a Physics PhD.





So ~17% of all Physics Degree holders will actually become Physics PhDs—and by extension "traditional physicists."

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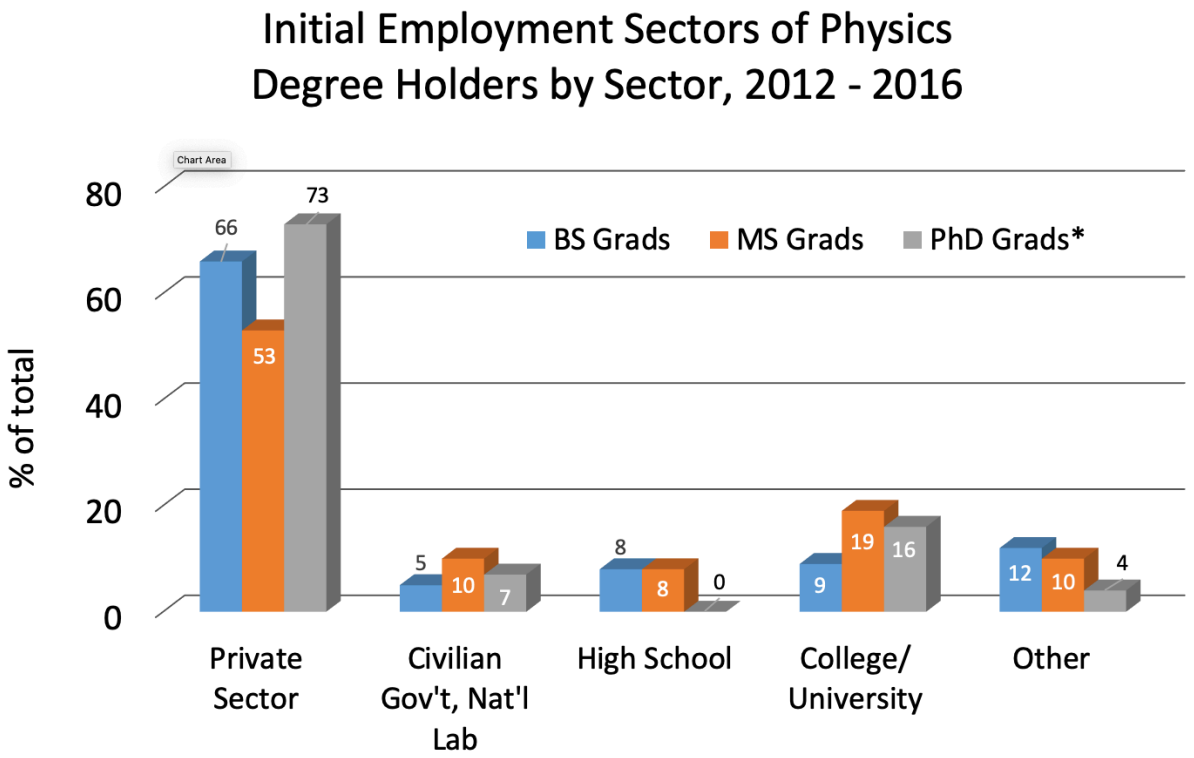
Some Statistics: Where Physicists Work

- Private Sector
  - *BS: comp. science and engineering, teamwork*
  - *MS: management, some research*
  - *PhDs: scientific research, product development*
- Academic Sector
  - *BS: primarily high school teaching*
  - *MS: lab coordinators, HS and college teaching*
  - *PhDs: permanent professors*
- National Lab/Government
  - *BS: technician, assisting users*
  - *MS: management of instrument teams, patent work, engineering*
  - *PhDs: senior research staff, oversee large operations*



*only includes potentially permanent positions. Temporary faculty and postdoctoral positions excluded.
Source: AIP Statistical Research Center, Focus on Initial Employment Reports, 2012 - 2016.

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Physics Workforce Summary

- Faculty positions are NOT the most common career path for physicists!
- Industry is the largest employment base for Physics PhDs…
  …and for Physics Masters
  ….and Physics Bachelors.

You can find a career which aligns not only with your interests, but also your values, by keeping your mind and eyes open!

There is a lot of great science to be done and opportunity to be found, in a lot of places!

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Careers: A Broad View

A successful career means building connections between:

- Skills Sets
  Does your skill set match the skill set needed for the job?
- Interests
  Will you find this job intellectually stimulating and/or rewarding?
- Values
  Is this job a good match your future lifestyle goals? or,
  Are the differences something you can reasonably adjust to?

A detailed self-assessment of skills *and values*
is what will help you achieve the perfect fit.

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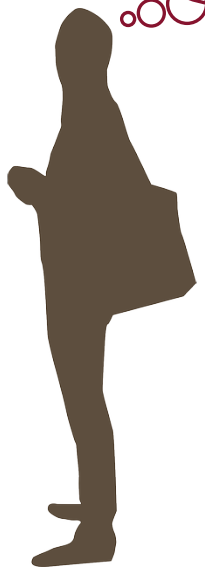
National Lab Scientist?

- Enjoys building things in lab
- Works hard, self-motivated
- Likes being creative
- Comfortable taking risks
- Enjoys being a leader
- Wants to make BIG money

Entrepreneur? Director of a Science Center?

Physics Professor?



- Finds science interesting
- Enjoys explaining concepts
- Confident being social
- Enjoys talking to people
- Is persuasive
- LOVES to travel

Sales and Marketing? Technical Consultant?

Many careers will match your talents, values and abilities.

The first step is knowing YOURSELF, before you decide which careers to further explore.

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Activity: Future Career Goals – 5 min.

Compose a List of Your Career Goals/Values, e.g.

- Doing interesting research
- Making a difference in people's lives
- Having a flexible schedule
- ??
- Working with other people
- Having a well-defined work schedule
- Making MONEY!!!
- ??

List Key Values Associated with these Careers

- National Lab Scientist
- Community College Teacher
- Sales Staff (Small Tech Company)
- R&D in Private Sector Company

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National Lab Scientist

Does science, supports users,
diverse relationships, travel restrictions

Sales Staff (Small Tech Company)

Use tech. knowledge, teaching, research,
travel, customer service

Community College Teacher

Teach, makes an impact, no publication pressure,
pay is less than college prof, positions often temp.

R&D in Private Sector Company

Scientific (even fund.) research, $$$,
corp. culture, rigid structure, less autonomy

Important Self-Assessment Resources

Strong® Interest Inventory
Myers-Briggs® Personality Test

These tests are often available FREE, or at minimal cost, from campus career services!!

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Informational Interviews

Making the connection means understanding not only your values and interests, but also the *jobs*. Informational interviews are your secret weapon.

- 30-minutes
- talk to a person from an industry or company of interest
- *you* ask the questions!

Getting informational interviews is easier than you think!

- Networks (Alumni, Prof. Societies)
- *LinkedIn®*

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Lost in Translation: Communicating your Skills Effectively

#1 Mistake Made by Physicists: Focusing on Labels Rather than Skills

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Resume Writing: Three Step Process

1) Understand the skills the job requires
   - *Hint: this means actually reading the job description!*
2) Assess honestly whether or not you have those skills, or whether you are genuinely interested in building them.
3) Connect the dots in your resume—focus on SKILLS, NOT ON LABELS!
   - **Skills Based Resume**
   - **Cover Letter**

CVs versus Resumes

- NOT interchangeable!!!
- Resumes no longer than **one page**.
- Expect to write a unique resume for **every single position.**

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1234 Maple Lane
Anywhere, OH 99934

Research Objective

To understand the basic principles behind everyday phe
importantly, get a job.

Education

- BS, Physics, Greenleaf University, 1995
- MS, Physics, University of South Whales, 1997
- PhD, Physics, University of South Whales, 2

Work Experience

- Postdoctoral Fellow, Department of Physics, U. of New South
  2008-present
- Postdoctoral Fellow, Department of Physics, U. of New South Whales, 2006-2008
- Postdoctoral Fellow, Department of Physics, New South Whales, 2004-2006
- Research Assistant, Department of Physics, New South Whales, 1998-2004

Publications

- A Measurement of Optical Scattering of Light Waves from Atmospheric Molecules (Journal of Obvious Science, Volume 6012, 2002.)

Presentations

- My bologna has a first name, it's OSCAR (44th Annual Meeting of the American Association of Physics of Food Service Society, 2003)
- My bologna has a second name, it's MAYER (Section Meeting of the Society for

Not to mention developing and leading a highly successful outreach program to local high schools, in her spare time.

She also designed and coded the software that runs the data acquisition system used to this day.

Jane devised signal processing techniques to remove background effects in her experiment.

Instrument Design Engineer/Scientist

lifornia
– 120K

Job Description:

The successful applicant will lead a new instrument team, ntrollers, data processing, and

plus. Candidates should also have strong written and oral communication skills, and should be comfortable in a leadership position and working with a team.

Is this a good fit?

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Let's Try T

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Data Acquisition Experience

- Designed and built sensors and electronic data acquisition system for light level measurement (Research Assistant, University of S. Whales, 1998-2001).
- Devised used signal-processing techniques to isolate and remove background (Research Assistant, University of S. Whales, 1998-2001).

Algorithm Design Experience

- Wrote analysis software using C++ and IDL, still in use by the research group (Postdoctoral Fellow, University of S. Whales, 2004-2006).

Leadership Experience

- Developed and led a science outreach effort to local high schools. (Postdoctoral Fellow, University of S. Whales, 2006-present).

Education

- BS, Physics, Greenleaf University, 1995
- MS, Physics, University of South Whales, 1997
- PhD, Physics, University of South Whales, 2001

Leadership/Service
Teaching Experience
Etc.

Instrument Design Engineer/Scientist

Location: California
Salary: 60K – 120K

Job Description:

The successful applicant will lead a new instrument team, and will have experience in microcontrollers, data acquisition, analog and digital signal processing, and algorithm design.

Ability to read schematics is also a plus. Candidates should also have strong written and oral communication skills, and should be comfortable in a leadership position and working with a team.

Sounds like a great fit! Let's get her in for an interview.

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Activity: Writing A Skills Based Resume

Select one of the following job descriptions (downloaded from the APS Job Board (careers.aps.org)

- Optical Engineer – IonQ (MS Level)
  Quantum computing, laser and optical systems, optical modeling tools (Zemax, Code V), CAD experience, electronics for laser drivers, feedback controllers
- Acquisitions Editor – World Scientific Publishing Co.
  Contracts, relationship building, identifying trends, marketing experience, strategic thinking, project management
- Technical Writing Scientist, Thorlabs (BS level)
  Strong presentation skills (writing and giving), SEO optimization experience, writing tutorials/spec sheets, building website content
- Technical Community Specialist – The Optical Society (BS level)
  Logistics/event planning, maintaining web pages, analytical ability, familiarity with scientific communities, using software and databases (e.g. Office, Excel)

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5 min - Identify Relevant Skills (Not Just Technical!!)

- Follow with bulleted items that describe your specific skills. Use the format: skill, (your title, the institution, and the relevant dates).
- Word bullet points in the active voice, e.g. "Designed," "Developed."
- Avoid repeating verbs—mix it up.

Examples:

- Created device controller using LabView (Graduate Assistant, U. of Maryland, 2009-2010)
- Designed, built and tested new electrical component for experiment (Summer Research Program, U. of Illinois Urbana-Champaign, 2014)
- Analyzed financial data using C++ and Python. (Quantitative Researcher Internship, Jump Trading, 2013-2014)
- Worked with course leader to develop new intro physics curriculum (Research Assistant, U of Arkansas, 2010-2012)
- Volunteered to do outreach in your community (Graduate Researcher, Hope College, 2011)

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2 minutes – Group Your Skills into Categories

- Look at your skills. Decide which are most relevant to your job description.
- Decide on Categories you can sort these skills into. These should be words in the job description, e.g. “Programming Skills”, ”Data Analysis Skills,” “Leadership Skills.”

5 minutes - Write Your Skills Based Resume

- On the worksheet, write your Skill Areas on the lines provided
- Fill in the appropriate bulleted skills under each of these headers.

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Name, Address, Info

Skill Area #1 – e.g. "Data Analysis Skills"

- Bulleted Skill (Title, Oranization, Year)
- Bulleted Skill (Title, Oranization, Year)
- Etc….

Skill Area #2 – e.g. "Leadership Skills"

- Bulleted Skill (Title, Oranization, Year)
- Bulleted Skill (Title, Oranization, Year)
- Etc….

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5 minutes - Trade Job Descriptions With Your Partner

- Read your partner's job description carefully. *You may or may not fully understand all details of what the description is asking.* This is actually realistic – do your best. Underline key skills.

10 minutes – Trade Resumes and Evaluate

Important role-play rules:

- You do not have a physics degree, nor are you familiar with specific subfields.
- You are scanning resumes to make an initial cut.
- You have 75 resumes to read in the next hour.

10 minutes - Share advice for Strengthening Resume

- What information was missing?
- What language did you not understand?
- How could the point have been made more succinctly?
- What else would you have preferred to see?

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What's Next?

If your resume does *its* job, you'll soon be faced with other questions like:

- Interviewing
  - How do I prepare myself? What can I expect?
- Negotiation
  - Should I negotiate my offer? What strategies can I use?
- Following Up
  - What are the standard practices? What if I don't receive an offer?

APS Online Professional Guidebook

- Features 5-minute "webinette" clips from the top APS careers webinars
- Topics include self-assessment, networking, interviewing and negotiation strategies, and more.

http://go.aps.org/physicspdguide

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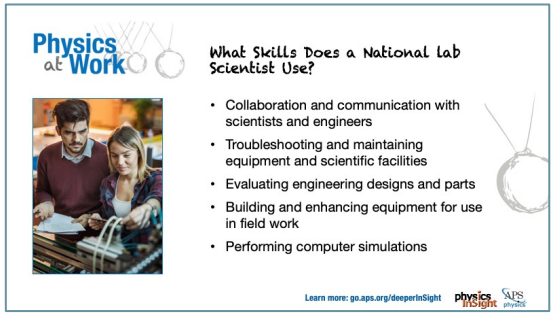
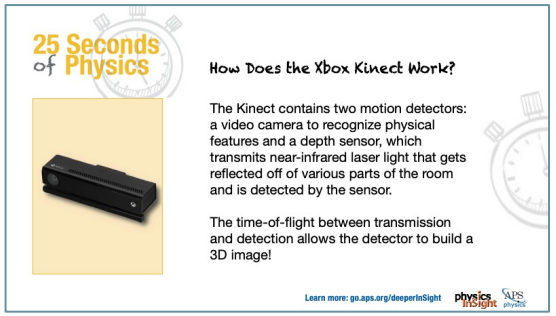
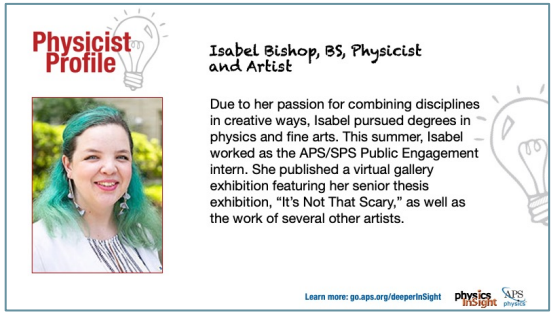
APS Careers Website

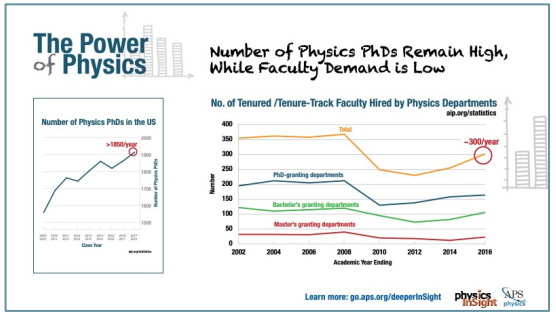
- Library of Physicist Profiles
- Job Prospects Pages
- APS Job Board
- Physics InSight Slideshow

aps.org/careers





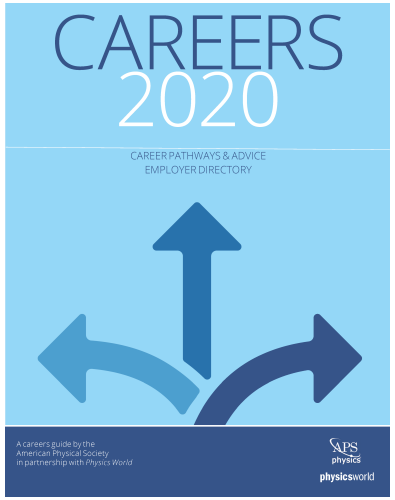




APS Careers 2020 Guide

Career guide for students and early career physicists.

- Profiles of physicists working in a variety of career paths
- Careers and professional development analysis articles
- Feature on Medical Physics Careers
- Employer Directory - Companies/organizations hiring physicists



go.aps.org/careers2020

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Attending the March Meeting?

Come Meet Google at the Diversity Reception!

Representatives from Google AI Quantum will be present at the APS Diversity Reception to network with students about career opportunities in their company. They are looking for young talent just like you!

Google AI Quantum

What: APS Diversity & Networking Reception
When: Wednesday, March 4, 7:00 - 8:30 pm
Where: Hyatt Regency Denver, Centennial C

march.aps.org/program/diversity-reception/

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Remember:

- Plan Effectively by Broadening Your Focus
  - *Use your resources to explore your career values and learn about career paths outside of academic physics.*
- Focus on Skills, Not on Labels
  - *Use skills-based resumes and cover letters to connect the dots between the job description and your skill set.*

Visit the APS Online Professional Guidebook and the Careers Website

THANK YOU!

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