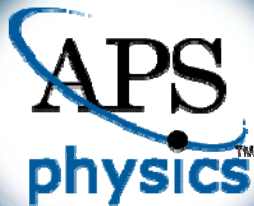


Graduate Career Options

Breaking the myth of the
“non-traditional” physicist



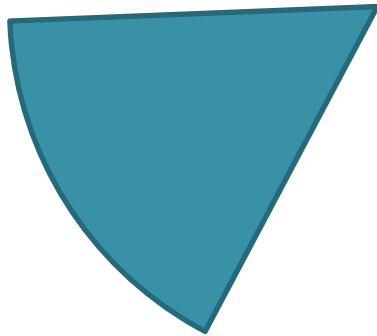
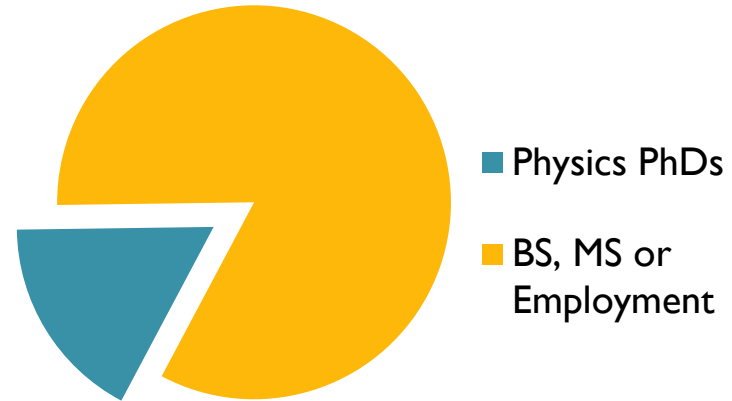
Crystal Bailey, PhD
American Physical Society

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.”

The Real Picture of Physics Employment

- Private Sector

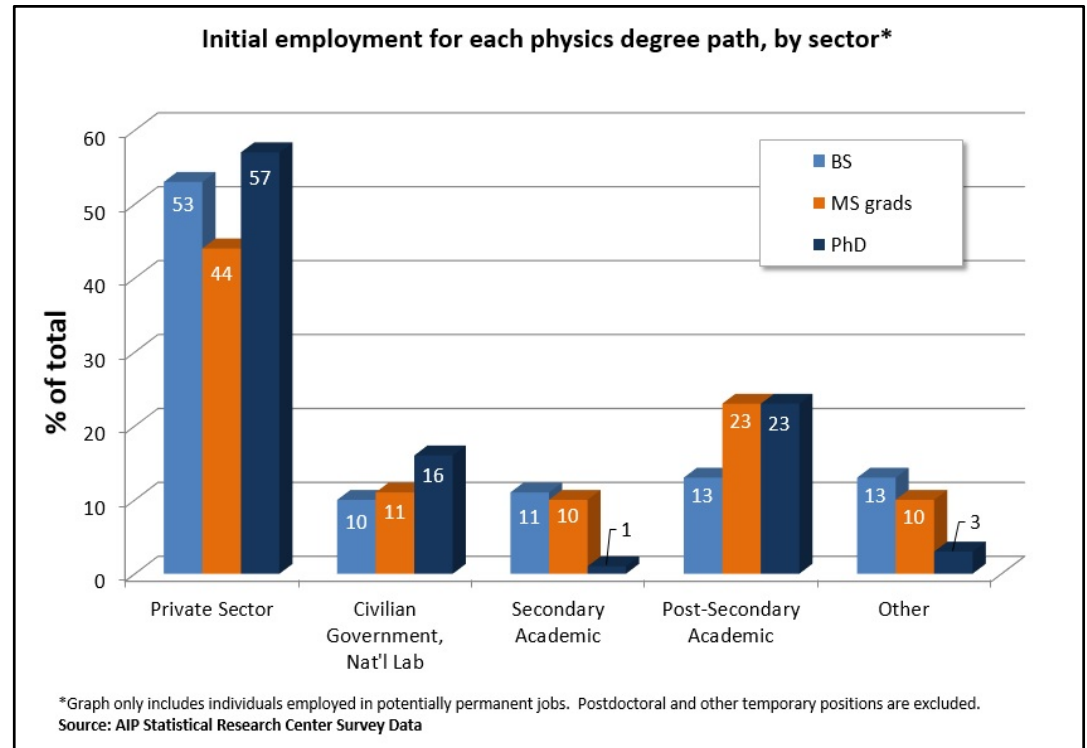
- *BS: comp. science and engineering, teamwork*
- *MS: management, some research*
- *PhDs: scientific research, product development*

- 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*



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 different places!

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.





Graduate
Researcher?

- 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
Teacher?

- 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.

- Strong[®] Interest Inventory
- Myers-Briggs[®] Personality Test

These tests are often available
FREE, or at minimal cost, from
Campus Career Services!!

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*[®]

Lost in Translation: Communicating your Skills Effectively

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



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 you apply for**.

Jane Q. Public

1234 Maple Lane
Anywhere, OH 99

Research Objective

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

Education

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

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

Instrument Design Engineer/Scientist

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

Job Description:

The successful applicant will lead a new instrument team, and will have experience in microcontrollers, data

She also wrote a data analysis program that is an essential piece of software in her group to this day.

... and should be comfortable in a leadership position and working with a team.

Is this a good fit?

Jane designed and built the entire electronic data acquisition system for her experiment.

Jane Q. Public
1234 Maple Lane
Anywhere, OH 99934

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 novel noise-reduction techniques to isolate and remove background (Research Assistant, University of S. Whales, 1998-2001).

Software 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.**

Activity: Assessing Transferrable Skills

5 minutes- Identify Transferrable Skills (not just technical skills!!)

- Created device controller using LabView
- Designed, built and tested new electrical component for experiment
- Used oscilloscope to isolate and minimize RF noise in circuits
- Built components using a drill press, lathe, band saw, etc.
- Worked with course leader to develop new intro physics curriculum
- Volunteered to do outreach in your community
- Speaks three languages fluently
- Etc.

Based on your list, select one of the following job descriptions, downloaded from the APS Job Board (careers.aps.org)

1. Signal Processing Analyst
2. Software Engineer
3. Instructor of Physics
4. Laboratory Lecturer/Coordinator
5. Jr. Physicist

Now use your listing to create a “group resume” for your job description

- Word bullet points in the active voice, e.g. “Designed,” “Developed,” “Manufactured.”
- Avoid repeating verbs—mix it up.
- Group bulleted skills under common categories, e.g. “Analytical Skills”, “Leadership Skills,” etc.
- Follow each bulleted item with (your title, the institution, and the relevant dates)

Continue to add to your stash of resume “building blocks”! Keep a Careers Journal and Write Regularly!

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
 - APS webinar “*Putting Your Science to Work*,” with Peter Fiske
 - APS webinar “*Career Self-Advocacy: How I Got A Six Figure Job in the Private Sector*,” with Meghan Anzelc
- Topics include self-assessment, networking, interviewing and negotiation strategies, and more.







<http://go.aps.org/physicspdguide>

APS Careers Website

- Library of Physicist Profiles
 - Advice from physicists representing a diversity of degree paths and careers
- Job Prospects Pages
 - Profiles feature the most common career paths for physicists
 - Includes day to day activities, additional skills and training needed, salary information, job outlooks

Physicist in a Government Funded Laboratory
Career Profile

 <p>Education BS, MS, or PhD in physics or in a related field</p>	 <p>Additional Training BS level - prior research PhD - prior research or postdoctoral appointment</p>
 <p>Salary BS \$36,000 - \$67,000 PhD \$70,000 - \$95,000</p>	 <p>Outlook BS init. employment: 10% PhDs init. employment: 16%</p>

What They Do
National laboratories employ physicists from a variety of degree paths—BS, MS, or PhDs. Some examples of activities of physics bachelors working in national labs include:



- Serving as an interface between physicists and engineers.
- Turning prototype systems into field-deployable units.
- Testing off-the-shelf or laboratory-developed equipment to determine if it meets experimental requirements.
- Evaluating engineering designs and parts.
- Performing computer simulations.

Physicist Profiles

Physicists masters and PhDs working in national labs often find themselves managing resources and people. In addition to doing research. Activities of these physicists in national labs can include:

- Seeking clients and funding for research, either alone or with a team of other scientists. Clients are usually government agencies.
- Researching issues of interest to clients. Research may be performed experimentally in a laboratory or through computer modeling and simulation. Research areas may be classified or sensitive.
- Traveling to field sites to test equipment developed in a laboratory in an actual working environment.
- Interfacing with clients, laboratory staff, and management to report research progress and challenges.
- Developing financial plans to stay within program cost and

Claudia Alexander
Claudia likes to write science fiction and ride horses when she's not studying comets and moons.


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The Road from Research to Commercialization
Free to the Public

Tuesday, December 3, 2013
4:30 - 5:30 pm IST (India/Sri Lanka)
6:00 - 7:00 am EST (Eastern US)

About the Webinar
In this webinar, distinguished professor and CEO Siva Sivnanathan discusses the many pitfalls, challenges, and accomplishments he experienced while becoming a world-renowned physicist and entrepreneur. He also shares advice for scientists who are looking to commercialize their work.

Webinar Slides
► Slides of Presentation

Webinar Video
► The Road from Research to Commercialization
Users who have not yet registered for the webinar will be asked to register to access the video.

Dr. Siva Sivnanathan
Dist. Professor, UIC
CEO and Founder,
EPR Tech, Inc.

Dr. Unil Perera
Regents' Prof. of Physics
Georgia State Univ.

- Physics Employment and Salary Information
 - Clearing house for most recent physics employment data from AIP SRC
 - Thumbnails and links to full reports for more information
- APS Webinars Archive
 - On-demand viewing for all webinar presentations

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 Development Guide](#) and the [Careers Website](#)

THANK YOU!

BAILEY@APS.ORG