

ATTENTION PHYSICS STUDENTS: You Have Options

Q: What can you do with a physics degree?

A: Get a PhD and become a physics professor OR ...

What comes after the "or" is not widely known in many physics departments, even though data show that only about a third of physics bachelor's degree recipients enroll in a physics or astronomy graduate program within one year of graduating. People with undergraduate degrees in physics pursue a variety of fascinating, fulfilling, and well-paying careers. This is evidenced by decades of data collected by the Statistics Research Center at the American Institute of Physics. Illustrated below are the common paths of physics bachelor's recipients based on the most recent data. Unless otherwise indicated, all data are for graduates of US physics programs who remain in the United States.

Over 7,300 physics bachelor's degrees were awarded in the class of 2012–13.

A record high!¹ Typically...

- Three-fourths of those who earn physics bachelor's degrees have **research experience**.²
- One-third graduate with a **double major**, many in math.³
- One-tenth start at **two-year colleges**.⁴

Within one year of earning a physics bachelor's degree...

~22% enroll in professional degree programs or attend graduate school NOT in physics or astronomy.⁵

- About half enter an **engineering** program; the rest enter programs in math, medicine, education, or another field.⁵
- As a group, physics majors score among the highest of all majors on medical school and law school admission tests (the MCAT and LSAT).⁶
- Students in professional degree programs are more likely to be **self-funded** than students in research-based graduate programs, who usually have teaching assistantships, research assistantships, or fellowships.⁵



~36% attend graduate school in physics or astronomy.⁵

- About 80% enroll in a **PhD program**; the remainder choose a master's degree program.⁷
- Most are **fully supported** by teaching assistantships, research assistantships, or fellowships.

Of those who start graduate school in physics or astronomy...



~42% enter the workforce.⁸

Common employment sectors include:

Private sector⁷

- Typically, **half** of those who enter the workforce take jobs in the private sector.
- Of those that enter the private sector, the majority hold science, technology, engineering, and math (STEM) positions.
- Those in private-sector STEM positions are well compensated, with a median starting salary of about \$50K.

Colleges or universities⁷

- More than half of the students in these positions initially work at the same institution they graduated from. Many work in research or IT.

Civilian government⁷

- The civilian government sector includes national labs. The vast majority of these positions are in STEM fields, many related to defense or energy.

Active military⁷

- Physics bachelor's work across all branches of the armed forces. Many work in aviation or nuclear power.

High school teaching⁷



The Statistical Research Center does not formally follow the career paths of these individuals, but we hear that they go on to successful careers in engineering, management, education, law, medicine, business, and a variety of other areas.



Add to the mix:

Foreign citizens coming to the United States for a graduate degree, students who earned bachelor's degrees in another field but want a graduate degree in physics, and students who earned a physics bachelor's degree in previous academic years.



~1 out of 6 US physics bachelor's receive a physics or astronomy PhD.⁹

- A doctorate in physics takes an average of **6–7 years**.¹⁰
- Most PhD students are **fully supported** by teaching or research assistantships or fellowships.

Within one year of earning a physics PhD...



~1 out of 12 US physics bachelor's receive an exiting physics or astronomy master's degree.⁷

Exiting master's degree recipients are individuals who leave their current department upon receiving a master's degree. Many other students earn an en route master's degree, continuing on to a physics PhD in the same department.

- About two-thirds of those who earn exiting master's degrees do so with a **specific research focus**.⁸
- A master's degree in physics usually takes about two years.

For US citizens, within one year of earning an exiting master's degree...



~2/3 enter the workforce.⁹

- About half work in the **private sector**, overwhelmingly in STEM fields.
- The largest portion of exiting master's working in the private sector are employed in the field of engineering.
- Other common employment sectors for exiting master's include **colleges and universities, high schools, civilian government, and the military**.



~1/3 continue with graduate studies.⁹

- Some transfer to other institutions to earn a **physics PhD**.
- Many others transfer to programs in **related fields** such as medical physics, atmospheric science, and materials science.



~2/3 accept a temporary position (e.g. a postdoc), primarily at a university or with the government.¹¹



~1/3 accept a potentially permanent position.¹¹

- The majority of new PhDs accepting potentially permanent positions are employed in the **private sector**.
- The **highest-paid** positions for new PhDs are in the private sector and at government labs, with median starting salaries of about \$90K and \$85K, respectively.



The approximate breakdown by employment sector for all employed physics PhDs (not just new ones), is given below.¹¹

- 45–49% Private sector
- 29–33% Academic
- 14–17% Government
- 5–7% Other

References and Notes

The following reports were published by the Statistical Research Center of the American Institute of Physics and are available online at: www.aip.org/statistics.

1. Starr Nicholson and Patrick J. Mulvey, *Roster of Physics Departments with Enrollment and Degree Data*, 2013, August 2014.
2. AIP Statistical Research Center, *AIP Physics Trends: Research Experiences of Physics Undergraduates*, Fall 2009.
3. AIP Statistical Research Center, *AIP Physics Trends: Physics Students Have Broad Interests*, Spring 2011.
4. Susan White and Raymond Chu, *Physics Enrollments in Two-Year Colleges*, April 2013.
5. Casey Langer Tesfaye and Patrick Mulvey, *Physics Bachelor's One Year After Degree*, September 2014.
6. Casey Langer Tesfaye and Patrick Mulvey, *MCAT, LSAT and Physics Bachelor's*, December 2013.
7. Casey Langer Tesfaye and Patrick Mulvey, *Physics Bachelor's Initial Employment*, September 2012.
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9. Patrick Mulvey and Brandon Shindel, *Physics & Astronomy Master's Initial Employment*, April 2011.
10. Patrick J. Mulvey and Starr Nicholson, *Trends in Physics PhDs*, February 2014.
11. Garrett Anderson and Patrick Mulvey, *Physics Doctorates Initial Employment*, July 2012.

*Estimate provided by the AIP Statistical Research Center, Summer 2014.

Learn more at the Careers Toolbox website:

www.spsnational.org/careerstoobox

