

# The Faculty Job Market in Physics & Astronomy Departments

Results from the 2008 Survey of Physics & Astronomy Degree-Granting Departments

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**REPORTS ON  
PHYSICS &  
ASTRONOMY  
FACULTY**

[Number of Physics Faculty  
\(10/2009\)](#)

[Astronomy Faculty  
\(12/2009\)](#)

[African Americans &  
Hispanics among Physics  
& Astronomy Faculty  
\(2/2010\)](#)

**Faculty Turnover in  
Physics & Astronomy  
Departments (6/2010)**

Women Faculty in Physics  
& Astronomy (8/2010)  
(This issue will include data  
for minority women.)

## The Faculty Job Lifecycle

In any year, departments may have faculty members leave; they may also gain faculty members. Some of the additions are to replace departing faculty, and some may be new positions entirely. In this report we examine this faculty job cycle in physics and astronomy departments. Table 1 provides estimated data on retirements and retirement rates for faculty in physics departments, and Figure 1 looks at all departures from physics departments. In subsequent sections we examine recruitments and hiring and provide data for departments which offer degrees only in astronomy.

**Table 1**

**Estimated Retirements and Retirement Rates  
for Faculty in Physics Departments,  
2006-07 and 2007-08 Combined**

	Highest Degree Awarded			Overall
	PhD	Master's	Bachelor's	
Estimated Number of Retirements	226	38	114	378
Estimated Percent of Departments with Retirements	42%	26%	11%	20%
Estimated Annual Retirement Rate	2.4%	3.1%	2.4%	2.5%
Number of Faculty	5,400	800	2,900	9,100

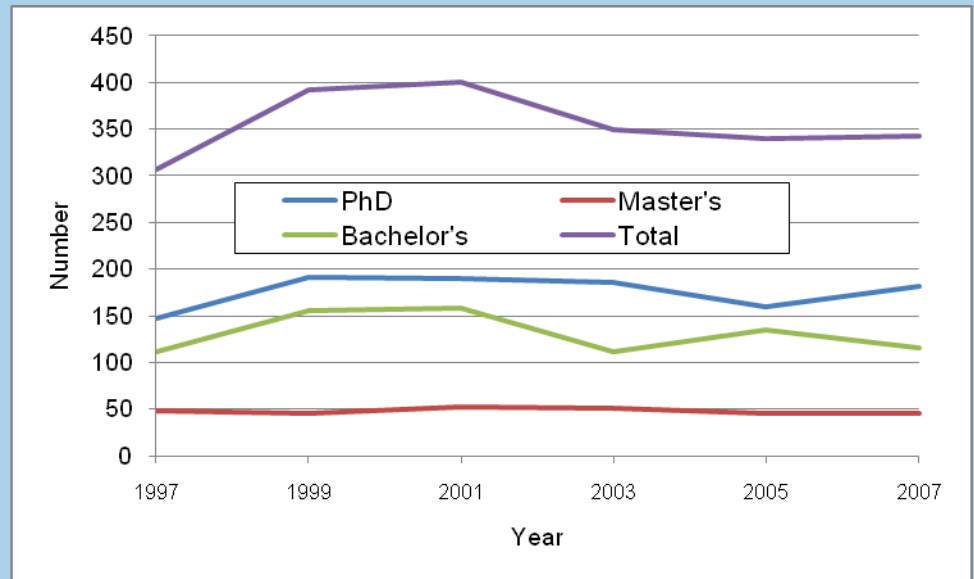
<http://www.aip.org/statistics>

**THE 2008 SURVEY OF  
PHYSICS &  
ASTRONOMY DEGREE-  
GRANTING  
DEPARTMENTS**

During the spring semester of 2008, we contacted all of the departments in the US that offered at least a bachelor's degree in physics and/or astronomy. These reports describe our findings.

Figure 1

### Departures by Tenured and Tenure-Track Faculty in Physics Departments, 1997 – 2007 by Highest Degree Awarded



<http://www.aip.org/statistics>

*The number of faculty departures from physics departments has changed little since 2003.*

## Departures and Recruitments

The retirements, shown in Table 1, are one type of departure from a department. Faculty members may leave for other reasons, including failure to earn tenure; in 2006-07, about 20% of the departing faculty members were tenure-track faculty who left prior to earning tenure. Figure 1 details all departures from physics departments between 1997 and 2007. (The retirements shown in Table 1 are a subset of the departures.) We gather data for every other academic year. These data have been called “vacancies” in previous reports, but we have opted for the term “departures” because we believe this is a more accurate description of the data.

There will be competing pressures on faculty departures in this tighter economy. Fewer of the faculty eligible to retire may choose to do so, leading to fewer departures. However, tighter departmental budgets could result in higher termination rates among non-tenured faculty—or a bigger reliance on them.

Table 2 provides more data on departures. About one physics department in three had a departure during 2006-07; however, departments with departures were much more common among departments that award graduate degrees than those that award a bachelor’s as the highest degree. This is not surprising, given that graduate departments

typically have more faculty members and, thus, would be more likely to experience a departure in a given year.

Not every departure results in an approval to recruit for a new faculty member, and not every authorization to recruit results in a hire. Thus, there is not a one-to-one match for the departures, recruitments, and new hires. In fact, our data show that the number of recruitments exceeds the number of departures and the number of hires by as much as 40% in some cases. While some of this variation may be attributed to timing, it is unlikely that timing alone explains the large discrepancy. This is neither unexpected nor restricted solely to physics and astronomy departments. In academia overall, not every recruitment results in a hiring—sometimes due to a failed search that does roll over and other times due to administrative decisions at the departmental, college, or university level.

We collect data every other year for recruitments for the upcoming academic year and hires during the current academic year. In the aggregate, the numbers do provide an accurate picture of what is happening, but we do not mean to imply that we track the recruitments and hires on a position-by-position basis.

**Table 2**

**Departures from Physics Departments  
by Highest Degree Awarded**

	Highest Degree Awarded			Overall
	PhD	Master's	Bachelor's	
<b>Estimated Number of Departures, 2006-07</b>	182	45	118	345
<b>Percent of Departments with Departures</b>	57%	57%	22%	33%
<b>Estimated Turnover Rate, 2006-07</b>	3.9%	7.4%	5.0%	4.5%

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*The high turnover rate in departments that award a Master's as the highest degree can be traced to the high retirement rate.*

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**Table 3**

**Recruitment for New Faculty Positions in Physics Departments by Highest Degree Awarded**

	Highest Degree Awarded			Overall
	PhD	Master's	Bachelor's	
<b>2008-09 Academic Year</b>				
<b>Number of Tenured &amp; Tenure-Track Recruitments</b>	298	46	185	529
<b>Number of Temporary &amp; Non-Tenure-Track Recruitments</b>	58	18	101	177
<b>2006-07 Academic Year</b>				
<b>Number of Tenured &amp; Tenure-Track Recruitments</b>	289	36	150	475
<b>Number of Temporary &amp; Non-Tenure-Track Recruitments</b>	42	16	110	168

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*The number of recruitments in 2008-09 was similar to that two years earlier.*

Table 3 shows recruitments for new faculty positions. While there were about 350 departures by tenured and tenure-track faculty during the 2006-07 academic year (Figure 1), there were 475 recruitments for the same time frame. There were 342 tenured and tenure-track faculty members hired in 2007-08; this difference between recruitments and hires is consistent with what we have seen in prior years.

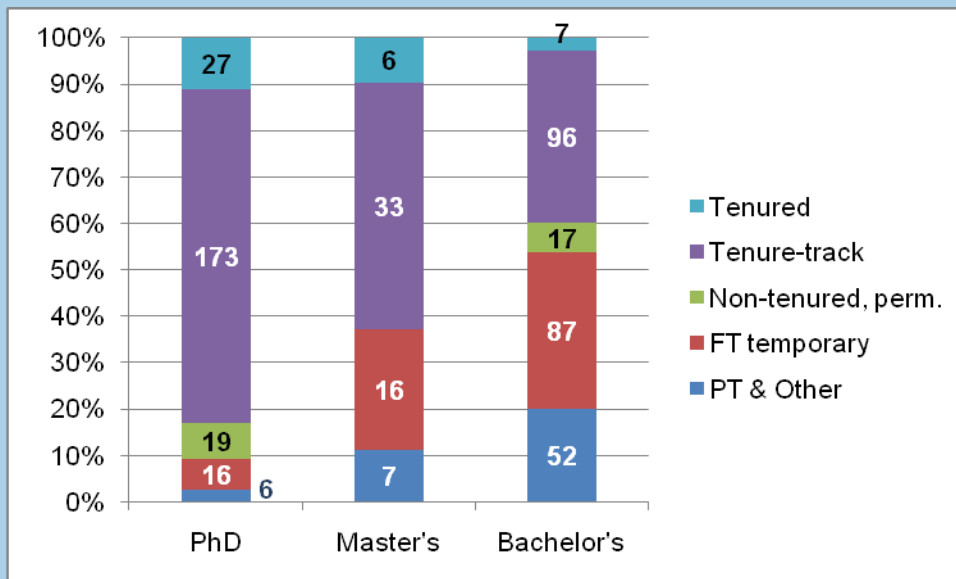
We have examined departures and recruitments; the last step in the faculty job market lifecycle is hiring. The data shown in Table 3 describe recruitment efforts for the 2008-09 academic year. The data for hiring are based on the 2007-08 academic year and are shown in Figure 2.

## New Hires in Physics Departments

Figure 2 provides data on the placement of new faculty members in physics departments by highest degree awarded. Over 80% of the new faculty in the PhD-granting departments are in a tenured or tenure-track position; this is true for about 40% of those hired by departments that award only a bachelor's degree. These ratios are fairly consistent with those seen in earlier years.

**Figure 2**

**Current Positions of New Faculty Members, 2007-08**



*Only 40% of the new hires in bachelor's-granting departments were in a tenured or tenure-track position.*

The numbers on the graph indicate the number of new faculty members.

Total number of new faculty:  
 241 in PhD-granting departments  
 62 in Master's-granting departments  
 259 in Bachelor's-granting departments

FT – Full-time ◆ PT – Part-time

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**Table 4****Immediate Previous Positions of New Physics Faculty, 2007-08  
for Tenured and Tenure-Track Hires\***

	Highest Degree Awarded	
	PhD (%)	Bachelor's (%)
Postdoc	54	32
Research Scientist	24	8
Tenured or Tenure-Track Professor	20	16
Graduate Student	1	11
Adjunct, Part-time, or Visiting Faculty	1	28

\*Includes permanent non-tenured faculty at schools without tenure.  
(Only the 5 most common categories of previous position are shown.)

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**Table 5****Academic Background of New Physics Faculty, 2007-08  
for Tenured and Tenure-Track Hires\***

	Highest Degree Awarded	
	PhD (%)	Bachelor's (%)
Earned PhD in US within last 5 years	44	55
Earned PhD outside US, any year	30	16
Earned PhD in US > 5 years ago; prior academic employment	22	29
Earned PhD in US > 5 years ago; prior employment outside academia	5	1

\*Includes permanent non-tenured faculty at schools without tenure.

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*A new tenured or tenure-track faculty member in a department that awards a PhD is twice as likely to have earned his or her doctorate outside the US than those in departments that award a bachelor's degree only.*

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As shown in Table 4, only 1% of the faculty hired in PhD departments were in graduate school just prior to joining the department. It remains true that the majority of new tenured and tenure-track faculty at bachelor's-granting departments has earned a PhD within the last 5 years; in addition, the proportion of these recent graduates among new hires in PhD-granting departments is up from 4 years earlier. This could be an anomaly driven by a few of the new hires in PhD-granting departments; we will see what next year's data shows.

## The Faculty Job Market in Astronomy Departments

In addition to the 763 physics departments (some of which also award degrees in astronomy), we contacted each of the 37 departments that award degrees only in astronomy (and not physics). Tables 6 and 7 provide some insights into the faculty lifecycle in these departments. In our [focus on Astronomy Faculty](#), we described the astronomy-only departments. In 2008, there were about 620 faculty members in these departments, and about 22% of the faculty were employed in temporary or non-tenure-track positions.

The turnover rate in the departments that award degrees only in astronomy was about half of that for physics departments. This is consistent with earlier years. The lower retirement and turnover rates are reflected in lower recruitment rates as well.

The recruitments-to-new hires ratio in astronomy-only departments exceeds that in physics departments rather significantly. This could indicate that there are more recruitments based on the anticipation of “soft money” in astronomy departments. However, this is the first time we have collected data for the astronomy-only departments, so we cannot know whether this is a one-time event or if it is suggestive of a real difference. We will have to monitor these data in future years.

**Table 6**

### Departures from Physics & Astronomy\* Departments

	Degree awarded by department	
	Astronomy*	Physics
Estimated Number of Departures, 2006-07	10	345
Estimated Turnover Rate, 2006-07	2.0%	4.5%
Estimated Retirement Rate, 2006-07 & 2007-08 Combined	1.7%	2.5%
Total Faculty	620	9,100

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*The lower turnover and retirement rates in astronomy-only departments are mirrored by lower recruitment rates in these departments.*

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\* “Astronomy” departments award degrees only in astronomy (and not physics); “physics” departments award degrees only in physics or in physics and astronomy.

<http://www.aip.org/statistics>

Table 7

## Recruitment and Hiring in Physics &amp; Astronomy\* Departments

	Degree Awarded by Department	
	Astronomy*	Physics
Estimated Number of Recruitments for 2008-09	36	705
Estimated Number of New Hires, 2007-08	19.5	563

\* “Astronomy” departments award degrees only in astronomy (and not physics); “physics” departments award degrees only in physics or in physics and astronomy.

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*The ratio of recruitments to new hires in astronomy-only departments is considerably higher than that in physics departments.*

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## Survey Methodology

Between March 20 and July 8, 2008, we contacted each of the 800 departments (763 physics departments and 37 departments that award degrees only in astronomy) that award at least a bachelor’s degree in physics or astronomy by e-mail, mail, and certified mail. Up to seven follow-up contacts were made for departments that had not yet responded. We received responses from 749 departments (94%). We offer our sincere gratitude to the responding departments. Without your help, we could not track these data.

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