

## **Preliminary findings from the Initial Employment Survey of physics PhDs, classes of 2005 & 2006**

- About 60% of the new PhD's in the classes of 2005 and 2006 accepted postdocs after receiving their degree. The proportion of new PhD's accepting postdoctoral positions has been a better job market indicator than the unemployment rate for physics PhD's, which is traditionally low and does not fluctuate a great deal. The recent sharp increase in the percentage of new PhDs accepting postdocs is similar to the increases seen in the mid 1980's. Both these increases preceded major economic recessions that affected the US and many other countries in the US. **(Figure 1)**

- The salaries that new physics PhDs receive can vary greatly by the type of employment they accept as well as by the sector in which they work. Postdoc salaries at the national labs tend to be higher and more varied than those offered by the universities. PhDs accepting potentially permanent positions in the private sector earn considerably more than those accepting non-postdoctoral employment in academia. The salary ranges presented for the non-postdoc academic positions are a combination of individuals who stated they were in potentially permanent positions as well as temporary positions. **(Figure 2)**

- Although a postdoc is the current prevailing employment outcome for all new physics PhDs, there are differences in the type of initial employment PhDs accept when disaggregated by dissertation subfield. Individuals with subfields in the more applied areas of physics, such as optics and materials science, are the most likely to accept potentially permanent positions after receiving their degree. **(Figure 3)**

- The types of employment new physics PhDs accept also differ considerably by citizenship. New physics PhDs who did not hold US citizenship were far more likely to accept postdoctoral appointments than their US counterparts, 68% and 50% respectively. **(Table 1)**

- The reason most frequently cited for why new physics PhD's accepted a temporary postdoctoral appointment was that they saw it as a necessary step to a desired future position. Other frequently cited reasons were to obtain additional research experience in their field or to work with a particular scientist or research group. One reason such a large proportion of the non-US citizens accepted postdoctoral appointments was that their visa status would have to be changed to hold a permanent position in the US. Although visa restrictions surely play a role in the career paths of non-US citizens, only five percent indicated that visa restrictions as the primary reason for taking a postdoc. **(Table 2)**

- The employment sector into which new physics PhDs are hired varies greatly by the type of position they accept. The private sector employed the largest proportion of physics PhDs who accepted potentially permanent positions. The majority of the PhDs accepting postdocs or other temporary positions were employed in academia. Academia employed 29% of the PhDs who accepted potentially permanent positions. **(Table 3)**

- Of the many skills and knowledge that physics PhD's acquire, scientific problem solving and basic physics principles continue to be the skills used the most by PhD's in their new positions. Overall, a higher proportion of the PhDs who accepted postdoctoral appointments reported utilizing specific skill sets than PhDs who accepted potentially permanent positions. This is attributable to the fact that individuals in postdoctoral appointments are immersed in physics research and are in part continuing to develop these skills. **(Table 4)**

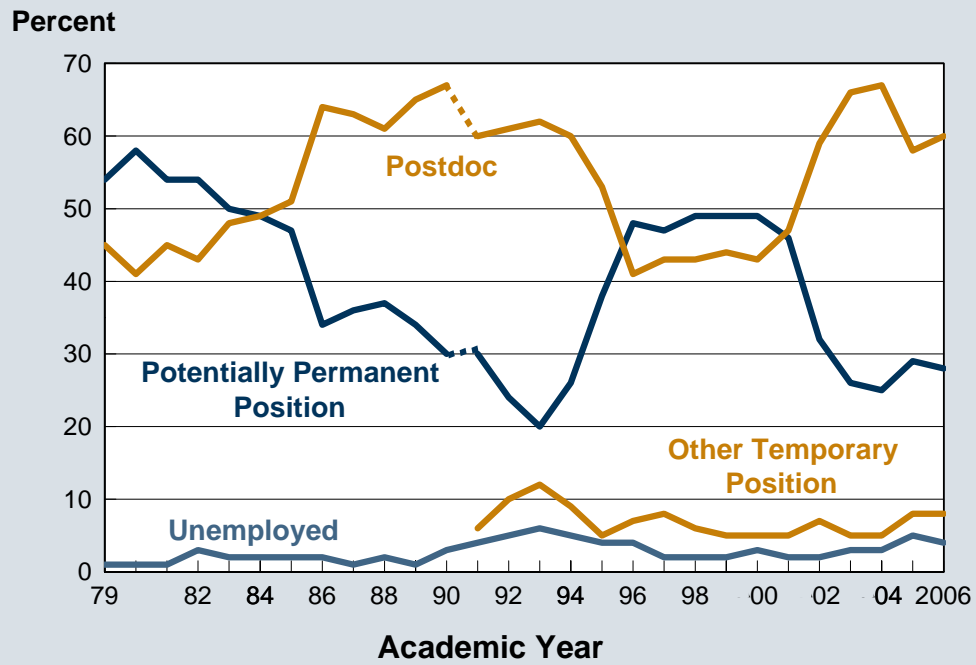
- New physics PhDs report very positive opinions about their initial employment outcomes. Virtually all (96%) of the PhDs who accepted potentially permanent positions reported that a physics PhD was an appropriate background for the position they accepted. **(Table 5)**

- An academic position at a college or university remains the prevailing long-term employment outcome to which most new physics PhDs aspire. Although this is

considered by many as the traditional career path for physics PhDs, in fact the private sector and the government historically employ the majority of physics PhDs. Twenty-four percent of the new PhDs aspired to careers in the private sector and 10% had a long-term goal to work in a civilian government or national lab position (**Table 6**).

- The type of initial employment new PhDs pursue after receiving their degree is influenced by the career ambitions they hold. The majority (76%) of individuals who had a long-term goal to work in a college or university position accepted a postdoctoral appointment after receiving their degree. A postdoc is typically expected as a necessary step to obtain such a position. New PhDs who aspired to a career within the civilian government or at national labs also had a high proportion (77%) accepting postdocs upon completing their degree. (**Table 7**)

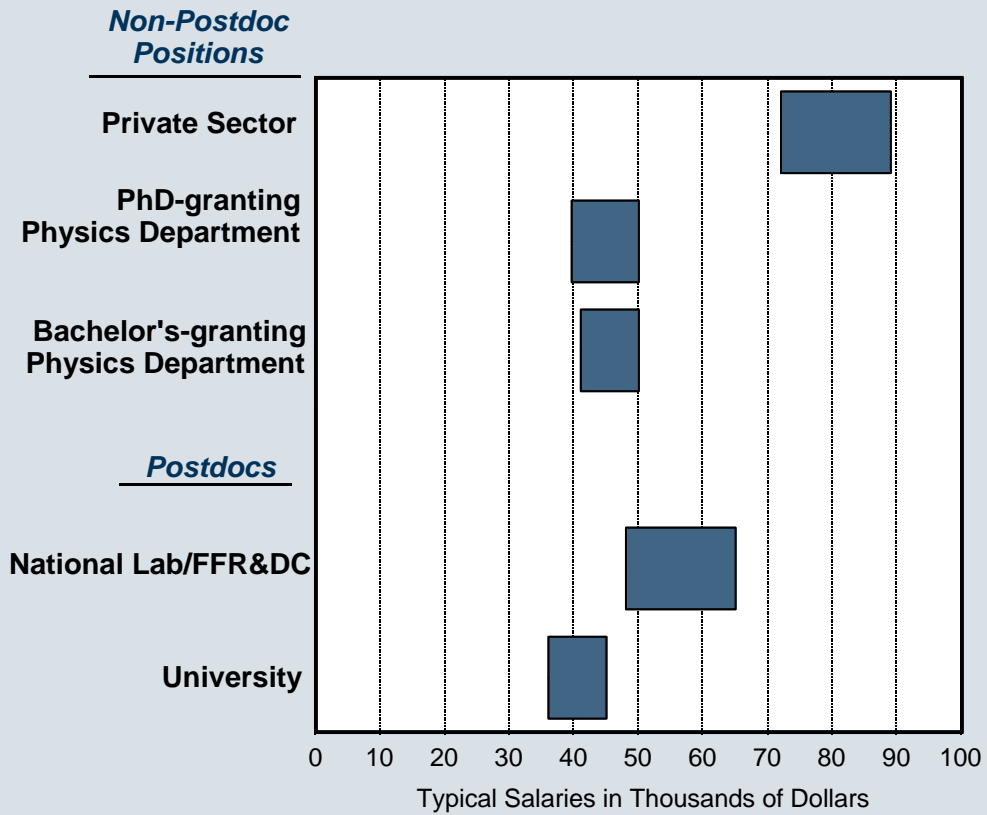
**Figure 1. Initial employment of physics PhDs , 1979-2006.**



In 1991, the survey questionnaire was changed to measure "other temporary" employment as a separate category.

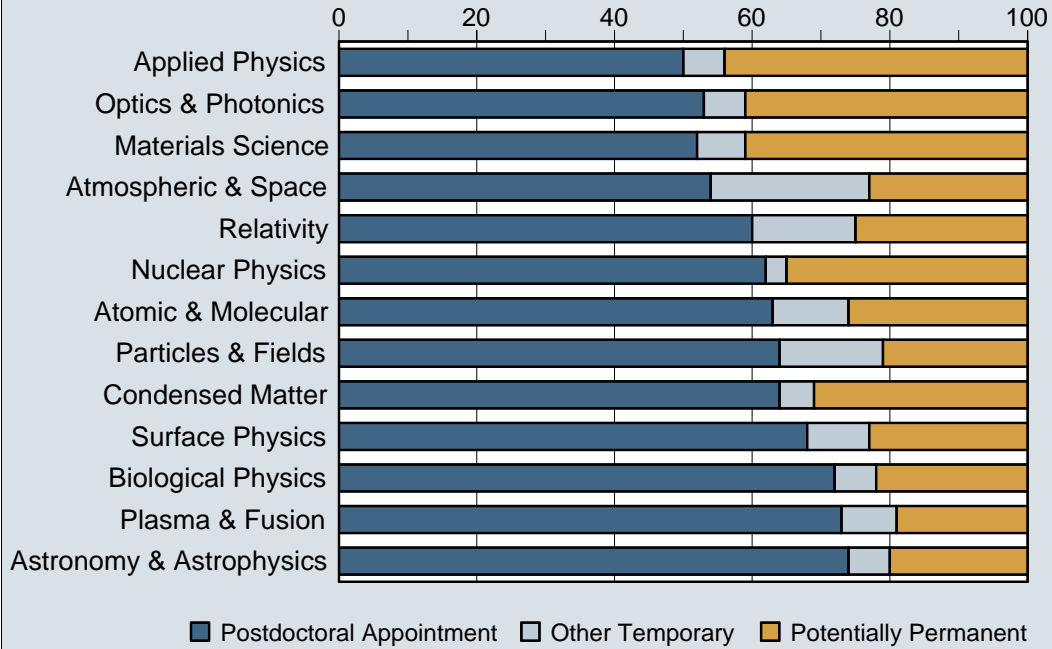
*AIP Statistical Research Center, Initial Employment Report.*

**Figure 2. PhD starting salaries,  
classes of 2005 & 2006.**



*AIP Statistical Research Center, Initial Employment Report.*

**Figure 3. Initial employment of physics and astronomy PhD's by subfield of dissertation, classes of 2005 & 2006**



*AIP Statistical Research Center, Initial Employment Report.*

**Table 1. Initial employment status of physics PhDs by citizenship, classes of 2005-2006.**

	<b>US Citizens</b>	<b>Foreign Citizens</b>	<b>Overall</b>
	<b>%</b>	<b>%</b>	<b>%</b>
Postdoc	50	68	60
Potentially Permanent	37	20	28
Other Temporary	11	6	8
Unemployed	2	6	4

*AIP Statistical Research Center, Initial Employment Report*

**Table 2. Postdocs from the classes of 2005-2006**  
*“What were the most important reasons for taking this temporary position?”*

	<b><u>Percent</u></b>
Necessary step to get desired future position	34
To obtain research experience in my field	22
To work with a particular scientist or research group	20
Could not obtain suitable permanent position	10
To switch to a different field	6
Personal or family related reasons	4
Visa restrictions limited my options*	3
Other	1

\* 5% of foreign citizens took a postdoc because of visa restrictions.

*AIP Statistical Research Center, Initial Employment Report*

**Table 3. Initial employment sectors of physics PhDs by type of position accepted, classes of 2005 & 2006.**

	Type of Position			Overall %
	Potentially Permanent %	Postdoc %	Other Temporary %	
Academic*	29	75	68	61
Private Sector	60	1	13	19
Government	10	22	12	17
Nonprofit	1	2	5	2
Other	-	-	2	1

\* Includes University Affiliated Research Institutes

*Statistical Research Center, Initial Employment Report*

**Table 4. Skills used by physics PhDs, classes of 2005-2006**  
*“To what extent does this position involve the following?”*

	Often or Always	
	Potentially Permanent	Postdoc
	%	%
Scientific problem solving	80	98
Basic physics principles	79	90
Software development or modeling	59	69
Sophisticated or specialized equipment	57	69
Advanced physics principles	53	79
Advanced Mathematics	42	55

Note: Percentages are based on a 4-point scale: never, infrequently, often, and always.

*AIP Statistical Research Center, Initial Employment Report*

**Table 5. Qualitative aspects of initial employment for physics PhDs  
in the classes of 2005 & 2006**

	Type of Employment	
	Potentially Permanent %	Postdoc %
<b><u>Percent Agreeing</u></b>		
A physics PhD is an appropriate background for this position	96	81
This position is professionally challenging	89	79
I am satisfied with this position	84	84
I consider myself underemployed in this position	17	19
Note: The percentages represent the two positive responses from a 4-point scale.		
<i>AIP Statistical Research Center, Initial Employment Report</i>		

**Table 6. Long-term career goals of physics PhDs,  
classes of 2005 & 2006.**

<u>Long-term Employment Goal</u>	<u>Percent</u>
College or University	59
Private sector	24
Civilian government or National Labs	10
Other	7

*AIP Statistical Research Center, Initial Employment Report*

**Table 7. Long-term career goals of physics PhDs, classes of 2005 & 2006.**

<b><u>Initial Employment Type</u></b>	<b>Long-term Employment Goal</b>		
	<b>College or University</b>	<b>Private Sector</b>	<b>Civilian Gov &amp; Nat Lab</b>
	<b>%</b>	<b>%</b>	<b>%</b>
Postdoc	76	35	77
Potentially Permanent Position	15	56	13
Other Temporary Position	9	9	10
	100	100	100

*Statistical Research Center, Initial Employment Report*