Numbers up in undergraduate physics, astronomy

Across the US, 4553 bachelor's degrees were awarded in physics and 325 in astronomy in the class of 2003. Those numbers represent a 25% increase in physics over a low four years earlier, and an unprecedented jump of 66% in astronomy over the same period. The experiences and plans of the new bachelors are discussed in a recent report by the American Institute of Physics.

Physics and astronomy accounted for only 0.3% of all bachelor's degrees awarded in the US in 2003; they made up 2% of degrees awarded in math, science, and engineering. The representation of women in undergraduate physics and astronomy increased 50% over a decade earlier. The most frequent reason respondents gave for choosing physics was interest in the subject matter; many majors also listed the influence of a high-school teacher or a professor, with more women than men citing this as a reason.

More than one-third of seniors in physics and nearly half in astronomy had double majors, compared with only 5% of bachelor's recipients across all fields. Nearly three-quarters of physics seniors participated in undergraduate research, and those who did were three times more likely to enter a graduate program in physics or astronomy than were their counterparts without research experience.

In 2003, the percentage of physics seniors planning to pursue graduate studies in physics or astronomy had increased by 8% since 1998, a shift offset by a decline in the percentage planning to enter the workforce. Some 39% of men and 34% of women physics seniors said they planned to continue with graduate studies in physics or astronomy. Forty-one percent of seniors in physics and 43% in astronomy said their long-term goal was to secure an academic position at a college or university (see table).

The *Physics and Astronomy Senior Report: Class of 2003* is available online at http://www.aip.org/statistics/trends/undergradtrends.html. **Toni Feder**

First choice of long-term career goals, 2003 physics and astronomy seniors

Career goal	Physics (percent)	Astronomy (percent)
College or university teaching and research	41	43
Engineering position	15	4
Other science or technical position	26	24
Pre-college teaching	5	5
Military	4	10
Other positions (non-science)	9	14

Physics has merit in new Boy Scouts program

Flip open the new 95-page Boy Scouts of America booklet on the requirements to earn the nuclear science merit badge, and you are greeted almost immediately with the command, "Do the following." The next four pages of numbered and lettered activities include such requirements as defining and explaining "ALARA, alpha particle, atom, background radiation, beta particle, contamination, curie and Becquerel, gamma ray, half-life. . . ." The list goes on. Turn to the next page and you are told to build an electroscope, place a radiation source inside, and "explain any difference seen." If that sounds daunting, you can build a cloud chamber instead.

The booklet is largely the work of physicist and Eagle Scout Howard Matis, a staff scientist with Lawrence Berkeley National Laboratory's nuclear science division. Matis, who holds his BSA science merit badge in chemistry, was working with Boy Scouts visiting his lab when he was struck by how outdated their material was. As a member of the American Physical Society's division of nuclear physics, he contacted the Boy Scouts and offered to help rewrite the booklet.

"The material they were using was based on the old atomic energy merit badge," Matis said. "The old book had been rewritten many, many times over the years and it was confusing and more oriented toward industry, not science." Working with a freelance writer, Matis, with the help of Rutgers University physicist Jolie Cizewski, designed a new book aimed at 13- to 17-year-olds who have not taken a physics course.

Prior to Matis's reworking the book and helping design a new badge, about 3000 boys worked toward the badge each year. Since his first revision came out last year, the number has jumped to 5000. Matis finished another update a couple of months ago.

"It's better than any high-school physics course for information on nuclear and particle physics," he said. "It focuses on nuclear physics, but I got some quarks in it." He also added a section on how to pursue a career as a physicist.

How hard is it to become an Eagle Scout? "It was harder than getting a PhD, at least for me," Matis said. "There was this physical fitness requirement and I had to do three pull-ups. It took forever." **Jim Dawson**