

Semester Abroad to SOAR in Chile

Hands-on experience with telescopes and immersion in Chilean culture, without getting behind in science studies—that's the rare opportunity that the University of North Carolina at Chapel Hill is offering as many as 15 of its undergraduates this fall.

"Studying abroad is usually a problem for science students, especially for physics types, because our curriculum is so lockstep. If students go away, they fall behind," says astronomer Wayne Christiansen, who, with colleague Gerald Cecil, is organizing UNC's semester in Chile. Students in the program will take a full course load, with such subjects as cosmic evolution, energy and sustainability, and Spanish, says Christiansen. They can also participate remotely in classes in Chapel Hill; likewise, students at the home campus can attend by video conference the classes held in Chile.

The semester in Chile will revolve around the Southern Astrophysical Research (SOAR) telescope, a 4.1-meter telescope for which a dedication ceremony will take place on 17 April. UNC is a partner in the \$32 million SOAR, which is located at an elevation of 2700 meters on Cerro Pachon. The university's involvement in SOAR, says Cecil, "was sold in part as an opportunity for undergraduates to do research. The [semester abroad] is the first realization of this."

The UNC students will help fine-tune SOAR. But first they'll get their hands dirty with Prompt, an array of four off-the-shelf 14-inch telescopes a few kilometers away. "We've told [Dan Reichart, the UNC astronomer who is developing Prompt] that he can view our students as a resource. The students will help us get the array set up.

That's the grungy research part," says Cecil.

When tipped off by *Swift*, a NASA satellite that is supposed to be launched this year, both SOAR and Prompt will point to gamma-ray bursters. The smaller, more agile Prompt telescopes will be programmed to slew automatically to a GRB within 5–10 seconds of notification and to image it at different wavelengths. SOAR will take better images as well as optical and infrared spectra, but will require a person to decide to preempt other observations and will take perhaps 5 to 10 minutes to get to a given GRB.

In addition to debugging, students will do their own research projects. Using SOAR, for example, they could study internal dynamics of active galaxies with Cecil or measure redshifts with Christiansen to determine if radio galaxies belong to a certain supercluster.

In Chile, students will split their time between the telescope sites in the mountains and the coastal town of La Serena, where SOAR operations are based. They will also take field trips to learn about the country's wildlife, glaciers, and active volcanoes.

About half of the students signed up for the SOAR semester are physics or astronomy majors; the rest have astronomy as a minor and are majoring in fields such as international studies and political science. Students will pay a total of about \$11 000 apiece to participate.

The program will be augmented by \$10 000 through an endowment from Lucius E. Burch III, an entrepreneur and a 1963 UNC graduate. "These seminars are an investment in the creativity of faculty and students.

They are about joining undergraduate teaching and research," says Jim Leloudis, associate dean for honors in UNC's college of arts and sciences. He ticks off street life in Beijing, food and culture in Burgundy, and plate tectonics in California as examples of previous Burch field research seminars. The university runs a handful of the seminars each year. The upcoming physics and astronomy semester in Chile, he adds, "could be a one-time offering. But if it goes well, we may want to put it on a more permanent footing."

Toni Feder

Magnet Lab Attracts Boebinger

Gregory Boebinger has been tapped to head the National High Magnetic Field Laboratory. This month, he moves from Los Alamos National Laboratory (LANL) to the NHMFL's headquarters in Tallahassee, Florida, to succeed founding director Jack Crow.

At the top of Boebinger's to-do list is putting together a proposal for renewed funding for the magnet lab, which has some 300 scientists and engineers on staff, hosts more than 400 user groups annually, and gets about \$25 million a year from NSF. The agency will decide later this spring whether to open the funding to competition for 2006–10. "We'll find out if we are competing against our own past accomplishments or against others' proposals," says Boebinger.

"A major focus of my efforts will be publicizing the role of the high magnetic field lab both to the general public and to the international science community," he says. "High magnetic fields are at a certain stage of maturity. We are delivering intense fields reliably. One challenge will be developing new areas of research—in chemistry, physics, materials science, biology, medicine, and geology."

In particular, Boebinger says, "we are looking into bringing high fields to neutrons and photons to magnets." That would involve installing a magnet facility at a neutron source and building a synchrotron light source at the magnet lab. "To a large extent," he adds, "we have not taken advantage of marrying those experimental techniques. High magnetic fields drive phase transitions in materials of interest, but right now there is no way to study the magnetic and crystal structure in the high magnetic field states."

The tri-campus NHMFL boasts three dozen or so magnets that are unique to the magnet lab, says Boe-



SERGIO FRANCO

The Southern Astrophysical Research telescope is the linchpin for an upcoming semester abroad program from the University of North Carolina at Chapel Hill.

binger. "The crown jewel is the 45-tesla hybrid in Tallahassee. It's the world's largest both physically and in terms of peak field." As examples of key research findings at the lab, Boebinger points to using ion cyclotron resonance to accurately weigh heavy molecules—of interest, for example, to the petroleum and pharmaceutical industries—and, with the University



Boebinger



Crow

of Florida's Evelyn F. and William McKnight Brain Institute, visualizing paramagnetic probes in living cells for gene therapy studies.

The strengths of the magnet lab's Tallahassee branch at Florida State University are nuclear magnetic resonance and continuous field electromagnets. Its smaller outpost on UF's Gainesville campus offers magnetic resonance imaging and ultra low-temperature capabilities. The third branch of the lab is a pulsed magnetic field facility at LANL, where Boebinger had been since 1998, most recently as deputy director of the materials science and technology division.

Crow, who is stepping down after 12 years in the top job to shift his focus from management to research and teaching, says, "I think Greg will do an absolutely outstanding job."

Toni Feder

News Notes

Colwell leaves NSF. Microbiologist Rita Colwell resigned as director of NSF in February, several months short of the official end of her six-year appointment to the position. Colwell, appointed by President Bill Clinton in 1998, said she was stepping down to become chair of *the* Canon Life Sciences, a subsidiary of Canon USA Inc.

In a statement, Colwell said she was grateful to have led NSF "through two administrations and major transformational changes." She noted that NSF's budget has increased 68% under her leadership and that "our programs have



Colwell

helped US science and engineering evolve into the flexible, robust, and diverse endeavors that they must become to keep America preeminent at the frontier of research and education." She said that she championed the increases in research grant amounts, which rose from an average \$90 000 in 1998 to \$142 000 now.

Colwell will also serve as Distinguished University Professor at the University of Maryland, College Park, and on the faculty of the Johns Hopkins Bloomberg School of Public Health in Baltimore, Maryland. NIST Director Arden Beament will serve as the acting director of NSF until Colwell's replacement is named.

JLD

US Physics Job Market Holds Steady

Employment patterns for physics and astronomy degree recipients in the US shifted little for the classes of 2000 and 2001, according to the latest report from the American Institute of Physics on recent graduates at all degree levels.

US universities conferred 1157 PhDs in physics in 2001, the seventh straight year of decline since a recent peak of 1481 in 1994. The number of astronomy PhDs granted each year has fluctuated around 120 over the same period; it was 101 in 2001. In 2000 and 2001 combined, 54% of physics PhD recipients were US citizens and 13% were women. The median time to earn a physics PhD was six years. The following employment statistics do not include the 5% of US citizens and 18% of noncitizens among the new physics PhDs who found work outside the US.

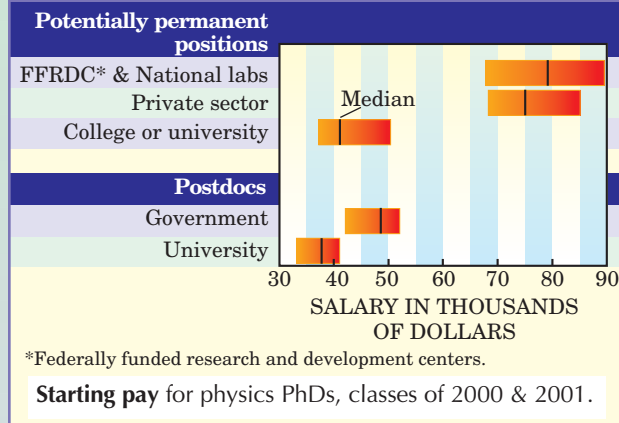
Starting salaries were up and unemployment was down for physics PhDs in the classes of 2000 and 2001. Nearly equal numbers took postdocs as took potentially permanent positions. That represents a slight shift to more postdocs, which in the past "has frequently coincided with weaker economic conditions," the report notes. Unemployment was 2%, down from more than 5% in the mid-1990s.

University-based postdocs earned a median starting salary of \$38 000 in physics and \$40 000 in astronomy, while postdocs in national labs took home \$48 000. In potentially permanent positions in the private sector, new physics PhDs pulled in \$75 000.

Physics masters who entered the job market earned a median initial income of \$55 000. The number of new physics bachelors increased in 2002, which continued the reversal of a long decline (see *PHYSICS TODAY*, July 2002, page 28). About half went directly to graduate school. The median starting salary of those who entered the workforce ranged from \$30 000 for high-school teaching to \$44 000 in private-sector jobs related to computers and engineering. Of those who went straight to work, 86% planned to continue their studies later.

These and other data are presented in the *Initial Employment Report: Physics and Astronomy Degree Recipients of 2000 & 2001*. The report may be downloaded from the Web at <http://www.aip.org/statistics/trends/emptrends.htm>. Single copies may be obtained free of charge from AIP, Statistical Research Center, One Physics Ellipse, College Park, MD 20740; e-mail stats@aip.org.

Toni Feder



National lab contracts extended.

Open bidding on the management contracts for several of the Department of Energy's national laboratories will be delayed for a year or more so the bidding process can "proceed in an orderly manner" and to allow "maximum opportunity for bidder participation," according to Secretary of Energy Spencer Abraham. While announcing the delays, Abraham reaffirmed his belief that "a competitive environment is generally desirable for the effective and efficient operation of our labs."

The delays most immediately affect the University of California's management contract at Lawrence Berkeley National Laboratory. The contract, which was set to expire 30 January, was extended 12 months. The university's