

spokesperson, insists that “the senator wants to see what scientific experiments can be carried out at NIF. . . . The intention is not to kill it. And it is certainly not the case that the senator is being provincial.” But in the budget Domenici added more than \$33 million for fusion-related activities, the majority of which went to research for the New Mexico-based Z machine at Sandia National Laboratories.

As planned, the finished NIF would be the world’s most powerful laser facility. By firing 192 laser beams simultaneously into a small pellet target containing tritium and deuterium, NIF would re-create the conditions inside a nuclear explosion or the Sun (see PHYSICS TODAY, April 2005, page 22). The project is a key component of the US Stockpile Stewardship program, which monitors the reliability of nuclear warheads without testing them. Recent experiments at NIF with the first four lasers have already tested the warhead simulation codes in regimes that were previously inaccessible.

The uncertainty is hurting morale at NIF. Last year, 300 researchers were laid off after Congress cut the 2005 construction budget by \$25 million. A recent DOE report hints that retaining staff is becoming a problem. “The funding provided in the Senate appropriation would require that the NIF project be shut down and abandoned in place, without the ability to operate even the four completed laser beams,” says Edward Moses, NIF’s acting associate director. “Significant employment reductions would result in the loss of NIF’s critical skills and knowledge base that are the product of 40 years of work in this field,” he adds.

The proposed cuts are also at odds with the stated goals of both the Bush administration and Representative David Hobson (R-OH), who sponsored HR 2419, the House version of the proposed FY 2006 water and energy budget. But Domenici says that NIF is taking up too much of the National Nuclear Security Administration’s budget, which is scheduled to shrink by \$3 billion over the next five years. “NIF construction cannot come at the expense of all the other stewardship programs,” he says. “NIF is just one of many tools that must be supported.” During the summer, members of the House and Senate, led by Hobson and Domenici, will try to achieve a compromise on the spending bill.

Paul Guinnessy

Women Unite to Improve Physics Culture

Taking stock after the Second International Conference on Women in Physics, held this past May in Rio de Janeiro, participants say that—as with the first such meeting, which took place about three years earlier in Paris—they came away energized.

Among the changes stemming at least in part from the Paris meeting (see PHYSICS TODAY, May 2002, page 24) are the creation of women-in-physics subcommittees in the Albanian and Japanese physical societies, studies of the climate for women in physics in both the UK and Canada, and science camps for grade-school girls in Senegal and Ghana. About 145 people, 7% of them men, from 42 countries attended the meeting in Rio de Janeiro, down from 300 people from 65 countries in Paris, a drop due largely to strained budgets.

Meeting attendees unanimously passed a resolution intended to promote the recruitment, retention, and advancement of women of all races and nationalities in physics. The resolution will be considered for endorsement this fall by the International Union of Pure and Applied Physics (IUPAP), which sponsored the conference.

Still in draft form, the resolution’s six recommendations call for IUPAP to require its liaison committees in the various member countries to

catalyze women’s participation in physics; encourage physical societies to share resources with isolated physicists—those, for example, living in developing countries, belonging to minority groups, or taking time off to raise children; require organizers of IUPAP-sponsored conferences to include more women; increase the presence of women among the organization’s leadership and practice institutional transparency; cosponsor development of training modules on such topics as gender and race equity in physics; and oversee an international survey in 2007 on the status of women in physics.

For women from the US, the meeting served as a “reality check to understand the barriers that women in physics in developing countries face,” says US delegation cochair Kim Budil, a Lawrence Livermore National Laboratory physicist currently at the National Nuclear Security Administration. “It’s a cultural embarrassment that in a wealthy and developed country, we still are talking about paid maternity leave. It would be nice if we could get past the infrastructure problems and work on the more thorny problems of climate and discrimination.”

“Many female scientists have difficulties seeing the problem, although it may become clearer when they get to higher positions and [have to] dispute the power with men,” adds conference cochair Elisa Saitovitch, an experimental condensed matter physicist at the Brazilian Center for Research in



Participants at the Second International Conference on Women in Physics say their conversations were deeper this time around, now that they’re getting to know each other.

Physics in Rio de Janeiro. Attaining equity and improving the culture for women in physics, she adds, “should be a joint effort [involving women and men]. I think deep down men have guilty feelings about the situation and some are doing something about it.”

Richard Hazeltine, a plasma physicist at the University of Texas at Austin, describes the meeting as “extraordinarily moving and an eye-opener.” Women from different cultures, with different histories, were saying the same things, he says. “Everyone looks the other way. We shouldn’t do that.”

In other news relating to women in physics, the American Institute of Physics reports that its reexamination of the “leaky pipeline”—the term used to describe women leaving academic physics in greater proportions than men (see PHYSICS TODAY, April 2005, page 28)—has generated a lively discussion. In response, AIP has posted some questions and answers on the Web at <http://www.aip.org/statistics/trends/reports/womenfaq.htm>.

Toni Feder

News Notes

Cosmic Colorado. The plains of southeastern Colorado have been chosen as the northern site of the Pierre Auger Observatory, a high-energy cosmic-ray detector. The site beat out Utah, the original front-runner, due to easier land access and greater potential for expanding the experiment.

Like its counterpart in the Southern Hemisphere, Auger-North will consist of 1600 tanks, each holding 12 000 liters of water and spaced at 1.5-km intervals, plus two dozen fluorescence telescopes. Charged particles produced by cosmic-ray showers are detected as they pass through the tanks and emit Cherenkov radiation, while the shower path can be traced by the telescopes.

The particles Auger is after are 10 million or more times as energetic as those produced in manmade particle accelerators and are rare: Above 10^{19} eV, only one particle per square kilometer is incident per year; above 10^{20} eV, it’s one per century. With Auger, scientists hope to unlock the mysteries of what the high-energy particles are and where they get their energy.

This month at a conference in Pune, India, the collaboration will present the first energy spectrum from the still-incomplete Auger-South. The data confirm that the detector and analysis are working.

AUGER COLLABORATION



An Auger Cherenkov detector.

Researchers from the 16 countries involved in the Auger experiment plan to submit proposals for the northern observatory to their various funding agencies by late 2007. Construction is expected to cost about \$50 million. **TF**

Enrollments and degrees. Physics and astronomy degree production in the US is growing, according to a new report by the American Institute of Physics.

The number of bachelor’s degrees in physics granted in 2003 was 4553, up 25% from the recent low in 1999. In astronomy, the increase was even sharper, with the 325 degrees awarded representing a 61% jump in three years. That increase was due largely to more women earning astronomy bachelor’s degrees. Physics bachelor’s degrees accounted for less than 0.4% of the 1.3 million bachelor’s degrees awarded in the US in 2003.

At the PhD level, 1106 physics degrees were conferred in 2003, a 1% increase over 2002. This slight increase followed eight years of steady decline.

Based on first-year graduate enrollments, steady growth in PhD production is expected in the coming years. In recent years, the proportion of new physics PhDs accepting postdocs has grown, from 45% in the late 1990s to 68% in 2003.

These and other data are presented in the *Enrollment and Degrees Report, 2003*. The report may be downloaded free of charge from the Web at <http://www.aip.org/statistics/trends/reports/ed.pdf>, or obtained from AIP, Statistical Research Center, One Physics Ellipse, College Park, MD 20740; e-mail stats@aip.org. **TF**

Oxford tackles the future. In June, Oxford University received a £60 million (\$100 million) donation to create an interdisciplinary research school. “It’s a virtual school in a way,” says Grace Haydon, a press officer at Oxford. “It doesn’t really have a central physical base.” The donation came from James Martin, a leader in bringing computer science to government and business, and is intended to help Oxford researchers think imaginatively about future threats and opportunities, such as global warming and shorter working hours.

Martin, who studied physics at Oxford during the 1950s, says that university researchers have become too specialized. “One of the most important activities for a leading university today should be the multidisciplinary academic thinking needed to find solutions to humanity’s biggest problems and address our future opportunities,” he says. **PKG ■**

WEB WATCH

<http://www.orau.org/ptp/museumdirectory.htm>

Run by Oak Ridge Associated Universities and supported by the Health Physics Society, the **Health Physics Historical Instrumentation Museum Collection** holds equipment and other artifacts that reflect the changing uses of radioactivity and radiation. Among the items featured on the museum’s website are movie posters, quack cures, and Geiger counters.



<http://www.fractalmusiclab.com>

The iterative and recursive algorithms behind fractals can be used wholly or in part to generate music. David Strohhoben’s **Fractal Music Lab** contains a primer on composing fractal music, along with samples of the genre.

<http://www.lhup.edu/~dsimanek/scenario/physlang.htm>

Let’s Clean Up Our Physics Language, urges Don Simanek, a physics professor at Lock Haven University of Pennsylvania. His webpage offers modest proposals to banish such woolly and misleading phrases as “flow of current” from physicists’ vocabularies.



To suggest topics or sites for Web Watch, please visit <http://www.physicstoday.org/suggestwebwatch.html>.

Compiled and edited by Charles Day