

funded by NSF and the Department of Education's National Center for Education Statistics. The project began in 1995, and follow-up studies are conducted every four years.

The test results show that minority students in the US, particularly African American and Hispanic students, made significant improvements in math and science at both the fourth- and eighth-grade levels. "We're pleased to note the improvements by minority students," said NSF Director Arden Bement. "Having access to quality teaching and challenging material in math and science can only help these students later use their acquired skills to fill opportunities in the workplace," he said. "Previous TIMSS studies showing declining mathematics performance in middle schools seem to have engendered a response by US school systems, because we now rank among the top three countries in the amount of time devoted to teaching algebra in eighth grade."

Several of the key rankings in the study are as follows:

- The mathematics scores of eighth-grade students by country have an "international average" of 466. US eighth graders scored 504 on the math test, placing them 15th on the list of 45 countries.
- The mathematics scores of fourth-grade students by country have an average of 495. US fourth graders scored 518, placing them 12th on a list of 25 countries.
- The science scores of eighth-grade students by country have an average of 473. US eighth graders scored 527, placing them 9th on a list of 45 countries.
- The science scores of fourth-grade students by country have an average of 489. US fourth graders scored 536, placing them 6th on a list of 25 countries.

Within the science category, NSF officials said, US students continued a trend of scoring higher in life, Earth, and environmental sciences than in physics and chemistry. Internationally, at the eighth-grade level, boys tended to do better in physics and Earth sciences, whereas girls generally scored higher in life sciences. Mathematics scores showed little difference between boys and girls. At the fourth-grade level, boys and girls scored about the same in both math and science.

"We should be concerned about US performance in chemistry and physics, which are critical parts of basic science," said Don Thompson, NSF's deputy assistant director for education and human resources. "But overall," he said, "TIMSS bodes well for our education system."

Jim Dawson

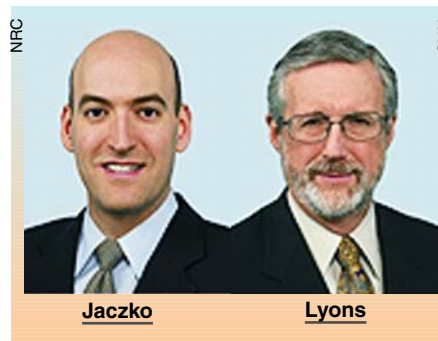
News Notes

Light source restarts at SLAC. The SPEAR3 storage ring at SLAC is once again supplying x-ray beams to users of the Stanford Synchrotron Radiation Laboratory (SSRL). After an accident at SLAC in October, lab director Jonathan Dorfan ordered all experimental facilities shut down pending an investigation and implementation of improved safety procedures (see PHYSICS TODAY, February 2005, page 24). In mid-January, Dorfan and the Department of Energy approved an SSRL team's restart plan. Two weeks later, SPEAR3 became the first facility at SLAC to resume operation.

SPEAR3 is a 3-GeV electron storage ring that serves as a synchrotron light source. Unlike the still shut-down B factory storage-ring collider, which gets its beams from SLAC's 3-km linear accelerator, the stand-alone SPEAR3 ring can run before the linac resumes operation. "The restart will not divert our attention from the strongest commitment to safety," says Dorfan.

BMS

NRC commissioners appointed. Two physicists with extensive experience on Capitol Hill have been sworn in as commissioners on the Nuclear Regulatory Commission following months of showdown politics between the



Jaczko

Lyons

Bush administration and Senate Minority Leader Harry Reid (D-NV). Reid's science adviser, Gregory Jaczko, was appointed to the commission by President Bush only after Reid blocked about 40 of the administration's nominees for everything from the ambassador to Ireland to the US attorney for Oregon.

The administration resisted Jaczko's nomination because he is closely identified with Reid's staunch opposition to the Yucca Mountain nuclear waste storage facility in Nevada. The Yucca license is set to come before the NRC sometime in the next two years. As part of a compromise between the administration and Reid, Jaczko was appointed for only two years instead of the normal five-year term. He also will not vote on any Yucca-related matters for his first

WEB WATCH

<http://chaosbook.org>



Since its debut in October 1994, the online textbook **Chaos Quantum and Classical** has aimed to provide physics graduate students with an up-to-date and authoritative course on chaos. In the words of the book's lead author, Predrag Cvitanovic of Georgia Tech, "It is better to have a webbook accessible to one and all, continuously improved, at the forefront, rather than chiseled in stone."

<http://measure.igpp.ucla.edu/solar-terrestrial-luminaries/timeline.html>

To add human interest to his course on Sun-Earth interactions, UCLA's Mark Moldwin has put together a webpage devoted to the pioneers of the field. His **Timeline of Solar-Terrestrial Physics** starts with Aristotle's *Meteorologica* of 850 BC and ends, at least for now, with Jim Burch's and Bill Sandel's IMAGE observations of 2001.



<http://interactions.org/quantumdiaries>



At **Quantum Diaries** you'll find the weblogs of 27 particle physicists from around the world. The diarists write as much about their lives (dirty diaper changes) as about their work (neutrino flavor changes). Quantum Diaries was created by the InterAction Collaboration, an international grouping of particle physics labs, to celebrate the World Year of Physics.

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

Compiled and edited by Charles Day

year. Jaczko has a PhD in particle physics from the University of Wisconsin-Madison.

A much less controversial appointment to the NRC was Peter Lyons, the long-time science adviser to Senator Pete Domenici (R-NM). Domenici is a strong advocate of Yucca Mountain. As part of the deal that got Jaczko on the NRC, Lyons is also appointed for only a two-year term but has no restrictions on voting on Yucca-related issues. Lyons, who worked at Los Alamos National Laboratory from 1969 to 1996, has a PhD in nuclear astrophysics from Caltech. JLD

Hawaii shines for solar scope. Haleakala is the favored site for the Advanced Technology Solar Telescope (ATST), a \$161 million project spearheaded by the US National Solar Observatory (NSO).

The site, 3 km high atop the Hawaiian island of Maui, emerged as the frontrunner after more than two years of testing six sites around the world for clear daytime skies and low levels of atmospheric turbulence, humidity, sky brightness, dust, and aircraft contrails. "The major goals of observing and understanding magnetic fields at their fundamental spatial

scales and all heights in the solar atmosphere are best fulfilled in Haleakala," says NSO Director Stephen Keil. At 4 m in diameter, the ATST will be the world's largest solar telescope. It will have a resolution of 0.03 arcsecond—or about 20 km on the Sun's surface.

Assuming that environmental, cultural, cost, and other studies permit the project to proceed on Haleakala—which is already home to the University of Hawaii's Mees Solar Observatory—construction on the ATST could begin in 2007, and the telescope could be working by 2012.

The biggest hurdles for the ATST, says Keil, "include cementing funding commitments from partners and obtaining a strong ranking in the MREFC [NSF's major research equipment and facilities construction] queue. Given the budgetary atmosphere in [Washington] DC and at NSF in particular, this may be a challenge." TF

New head for NREL. Dan Arvizu, a long-time Sandia National Laboratories researcher in solar energy and other alternative energy fields, has been named the new director of the National Renewable Energy Laboratory in Golden, Colorado. Arvizu moves to

the NREL job from CH2M Hill, a Colorado-based multinational construction and engineering company.

"Dan is well known around the Department of Energy as someone who understands energy technology. Not just renewable energy, but nuclear and fossil energy as well," said David Gorman, DOE's assistant secretary for energy efficiency and renewable energy. Arvizu, who has a PhD in mechanical engineering, began his career with Bell Labs in Denver in 1973, and then transferred to Sandia's solar energy division in 1977. AT&T, parent of Bell Labs, operated Sandia at the time.

In 1992, Arvizu became director of Sandia's advanced energy technology and policy center and in 1996 was named director of the lab's materials and process science center. In 1998, he moved to CH2M Hill.

"Renewable energy has a significant role to play; not the only role, but a significant one," Arvizu said after his appointment in early January. "I plan to strengthen the role of the laboratory in providing credible technology solutions that are viable in the marketplace." Arvizu succeeds former astronaut and NASA administrator Richard Truly, who was NREL's director for seven years. JLD ■

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