

It is expected that the host country would have to pay about half the ILC's construction cost. But the alternative to bearing that expense would require a generation of US particle physicists to do their experiments abroad. More important, says committee member Jonathan Bagger of Johns Hopkins University, would be the consequent loss of US leadership in this field. The committee's report urges a concerted effort to avoid that prospect. "What we've recommended," says Sally Dawson, a committee member from Brookhaven, "is the thoughtful pursuit of a high-risk, high-reward strategy." But even riskier, thinks chairman Shapiro, would have been "to continue on the current trajectory without doing anything."

Bertram Schwarzschild

Politicians skeptical about need for ARPA-E

"We live in a truly magical time," said physicist Steven Chu, director of Lawrence Berkeley National Laboratory, as he opened his testimony in March before the US House of Representatives Committee on Science. "With the flick of a finger, the power of 10 horses flows from a small wire in the wall of our homes to clean our carpets." Chu was trying to convince skeptical committee members to support the creation of the Advanced Research Projects Agency-Energy (ARPA-E) as an innovative way to help solve the growing US energy crisis.

Chu, one of the authors of last December's National Academy of Sciences' report *Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future* (available from the National Academies Press at <http://www.nap.edu/catalog/11463.html>) that recommended the creation of ARPA-E, continued to extol the virtues of energy for the committee, noting that abundant energy supplies have allowed us to "live well beyond the dreams of Roman emperors."

But after waxing poetic, Chu got down to business, telling the committee members that worldwide consumption of energy has nearly doubled between 1970 and 2001 and is expected to triple the 2001 demand by 2025. "The extraction of oil, our most precious energy source, is predicted to peak sometime in 10 to 40 years, and most of it will be gone by the end of this century," he said. "What took hundreds of millions of years for nature to make will have been consumed in 200 years."

As a result, he said, the US must move aggressively to develop new technologies to supply the US with clean and sustainable energy, and the creation of ARPA-E within the Department of Energy's Office of Science would help do just that. ARPA-E, as proposed in the *Gathering Storm* report (see PHYSICS TODAY, December 2005, page 25), would sponsor generic energy research "where risks and potential payoffs are high, and where success could provide dramatic benefits for the nation." It would be modeled after the highly successful Defense Advanced Research Projects Agency. DARPA identifies and funds innovative research for the military, but its independence from the traditional military command has allowed it to support risky, long-term research over its nearly 50 years.

Although science committee chairman Sherwood Boehlert (R-NY) and most other members of the committee strongly endorsed the *Gathering Storm* report, several expressed significant skepticism about ARPA-E at the hearing. Boehlert noted that many energy technologies are "just sitting on the shelf," and the creation of yet another government agency doesn't guarantee they will get to the marketplace.

Rep. Judy Biggert (R-IL), chairman of the science committee's energy subcommittee, was more dubious than Boehlert. "Why am I so skeptical? Let me count the ways," she said. "First, it is not clear what problems we are trying to solve with the creation of an ARPA-E." If it is the lack of private-sector investment in basic energy research, she asked, then how does creating a new agency to distribute scarce federal money help? If it is a failure by the federal government to fund transformation research, she continued, how do ARPA-E supporters explain the DOE's hydrogen initiatives, or US participation in ITER, or the proposed global nuclear energy partnership?

If DOE isn't transferring existing technology to the marketplace, she added, why not fix that problem instead of creating a new agency? "In short," Biggert concluded, "is [ARPA-E] a solution in search of a problem?"

Boehlert reminded Chu and others who testified at the hearing that federal funding is extremely tight and, with new funding not likely, asked if they would support taking money from other Office of Science programs. Rep. Bart Gordon (D-TN), the ranking minority member on the committee and sponsor of a bill to establish ARPA-E, said choosing between ARPA-E and the

WORLD'S SMALLEST MCA



Size: 6.5" x 2.8" x 0.8"
(165mm x 71mm x 20mm)

Weight: <300 grams (including batteries)

RUNS FOR 24 HOURS ON 2 AA BATTERIES

The MCA8000A is a full featured, low power Multichannel Analyzer intended to be used with a wide variety of detector systems.

POWERFUL

- 16k data channels
- Conversion time $\leq 5 \mu s$ ($>200k$ cps)
- 2 stage input analog pipeline
- Differential nonlinearity $< \pm 0.6\%$
Integral nonlinearity $< \pm 0.02\%$
Sliding-scale linearization
- 2 TTL compatible gates for coincidence and anticoincidence
- Stand alone data acquisition

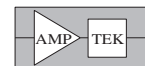
VERSATILE

- Stores up to 128 different spectra
- Two peak detection modes:
First peak after threshold
(nuclear spectroscopy)
Absolute peak after threshold
(Particle counter calibration in clean rooms)
- 115.2 kbps serial interface
- Serial ID number via software

INGENIOUS

- Of course - it's from Amptek

Free Software supports ROI, energy calibration, peak information, MCA configuration, and file management.



AMPTek Inc.

14 DeAngelo Drive, Bedford, MA 01730-2204 USA
Tel: +1 781 275-2242 Fax: +1 781 275-3470
e-mail: sales@amptek.com www.amptek.com

Office of Science programs was “the wrong question.” The choice, he said, should be either achieving energy independence or spending money on the Star Wars missile defense program and continuing to cut taxes.

Although most of the committee members are strong advocates of using science and technology to move beyond the current energy infrastructure, the ARPA-E proposal remains in limbo. Science committee staff said some version of a new energy research agency would likely be proposed in mid-June, probably with a lower price tag than the \$1 billion for ARPA-E recommended in the *Gathering Storm* report.

Jim Dawson

Korea sends Laughlin packing

Robert Laughlin's stint as president of the Korea Advanced Institute of Science and Technology in Daejeon, South Korea, comes to an end next month. The Ministry of Science and Technology decided in April not to renew his two-year contract after some 90% of KAIST professors gave him a vote of no-confidence

and nearly all deans and department chairs quit their administrative posts to protest his continuing in the job.

In naming the physics Nobel laureate president in 2004, the ministry apparently hoped to



Laughlin

raise the international visibility and stature of KAIST. As a foreigner, Laughlin was at an advantage for introducing change, says KAIST vice president Sang Soo Kim.

Some of Laughlin's ideas were good, Kim says. “But he failed to build mutual trust between him and the professors.” Also working against Laughlin, Kim adds, “were his lack of experience running a university and his confrontational style of management.”

Others on the KAIST faculty are harsher in their criticism of Laughlin. “Professors are disappointed in him because of his lack of vision and lack of passion for KAIST,” says Yong Hee Lee, chair of the physics department. “Also, in other places, he said KAIST is not up to par. As a president he was degrading his own institution.”

For his part, Laughlin insists that the clash at KAIST was cultural and politi-

cal and that his “personality and policies had nothing to do with it.” To start with, he says, “I was hired by the ministry. I have legitimacy from the government, but no legitimacy from the troops.” And, he adds, “I got orders from the ministry not to build up mutual trust with the professors. I got orders from them to do stuff the professors would not accept.”

Among his achievements at KAIST, Laughlin counts a \$20 million a year hike in the institute's budget and, most important, he “managed to put the reform agenda in writing and get it into the public eye. That's 90% of the battle. Now the monkey is on the back of whoever takes the reins.” The reform will include tying salaries to merit.

The faculty rebellion against Laughlin has brought unwanted attention to Korean science, which already had its tail between its legs in the wake of Hwang Woo Suk's fraudulent claims of cloning. Duke University physicist Moo Young Han, editor of the online newsletter *Korean-American Science and Technology News*, calls both affairs symptoms of “Nobel disease”—referring to the immense pressure in Korea to land a Nobel science prize. Laughlin's tenure at KAIST, Han adds, “was destined for failure, albeit not as spectacularly as happened.”

In July, Laughlin heads back to Stanford University, where he plans to teach, research, and write “anything that brings income.”

Toni Feder

news notes

Scientists protest Guantánamo. In a 30 April letter in the *New York Times*, 19 members of the National Academy of Sciences accused the Bush administration of showing disdain for international law and crossing the limits of acceptable practices in the treatment of prisoners at Guantánamo Bay, Cuba. Physicists Freeman Dyson, David Gross, Walter Kohn, Leonard Susskind, Frank Wilczek, and Edward Witten were among the letter's signers.

Physicists have long been involved in promoting democracy and human rights, sometimes at the cost of their personal freedom, says Susskind. This interest makes many physicists especially sensitive about illegal imprisonment and other abuses of power, he adds.

“I don't deceive myself into thinking that the letter will, by itself, change things,” says Susskind. “But perhaps it will add a tiny bit to a growing feeling that we are moving into dangerous territory.”

PKG

Hydrogen, the contest. First there was Charles Lindbergh, who in 1927 won a \$25 000 French prize for the first solo, nonstop transatlantic flight. Then in 2004 Burt Rutan picked up the \$10 million Ansari X Prize for getting a manned, reusable craft up into space and back again. But the Lindbergh and Rutan awards would pale in comparison to the \$100 million-plus “H Prize” that US Representative Bob Inglis (R-SC), chair of the House Committee on Science research subcommittee, is proposing as “the most nongovernmental way to break through to a hydrogen economy.”

His legislation, known as the “H-Prize Act,” would grant four \$1 million prizes annually for technology development involving hydrogen storage, production, distribution, and utilization. There would be a \$4 million prize given every two years for hydrogen vehicle prototypes. But the big prize, \$100 million—\$10 million in cash and up to \$90 million in private capital matching funds—would be awarded for “changes in hydrogen technologies that meet or exceed objective criteria in production and distribution to the consumer.”

Some Democrats suggested during a hearing that the millions of dollars would be better spent directly supporting hydrogen research. But the committee moved the bill to the House floor for a vote, with science committee chairman Sherwood Boehlert (R-NY) noting that “we are pretty far away from knowing how to create, store, distribute, and use hydrogen cleanly and efficiently. We need . . . all the ingenuity we can muster to attack this problem.”

The House overwhelmingly passed the bill 416 to 6 on 10 May with Inglis saying, “This is no science project. A hydrogen future is closer than we think.”

JLD

ESO expands. Three countries are at various stages of joining the European Southern Observatory. Spain will become a member on 1 July, and the Czech Republic and Austria hope to follow suit soon. With all three, ESO's ranks would grow to 14 countries.

Member countries pay an annual fee and an entry fee based on gross domestic product. Spain's fees total around €10 million (\$12.8 million) annually plus more than €60 million to join. A quarter of the entry fee will be paid in software development and in use of the country's 10.4-m segmented Gran Telescopio Canarias—which will see first light later this year—both for science and for testing technologies for a future 30- to 100-m Extremely Large Telescope (ELT).