

budget is expected in early April. But major changes are not expected in the broad outlines of Bush's blueprint.

"I am hoping we can improve the initial figures for research. They're not cast in stone yet," says Congressman Vernon Ehlers (R-MI), one of two physicists in the House of Representatives. "NSF is not adequate, and I am worried about DOE. I will put in a lot of time and effort to make sure we get equitable funding across science. In past years, in spite of a sometimes dismal early outlook, it's come out pretty well."

Even before the blueprint was available, various consortia of science groups wrote to the president urging, for example, that funding for DOE's Office of Science and NSF go up by 15% each. And in an op-ed column in *The New York Times* on 9 March, D. Allan Bromley, a nuclear physicist at Yale University who served as President George H. W. Bush's science adviser, summed up: "Congress must increase the federal investment in science. No science, no surplus. It's that simple."

But with the president's clear priorities—education, the military, health, and the tax cut—and no science adviser yet in place, says Bromley, "this year, more than most years, I have the feeling the budget will look like the administration's proposal." Last year's 9% across-the-board increase to science was an anomaly, he adds. "This year we are talking about at most an inflationary increase. . . . Nobody is against science and technology. They just don't realize how closely it is linked to the major thrusts of the new administration. We need to point that out." It may well be that scientific societies and others will find it difficult to make significant changes for 2002, Bromley adds. "We'll have to really focus on 2003."

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ITER Gets Boost from European Commission

For decades, the promise of fusion energy has had a bad rap for hovering perpetually 20 or more years down the road. That's a reputation supporters may soon get a chance to change if cash comes through for the International Thermonuclear Experimental Reactor. In late February, the European Commission included 200 million euros (roughly \$187 million) toward the \$4 billion tokamak in its draft Sixth Framework Programme, the European R&D budget

for 2003–06.

The inclusion of ITER, which is intended to show the feasibility of fusion energy, came after Europe's research ministers gave the project the nod. At an informal gathering in January, they discussed four scenarios: wiping out fusion research, cutting back to a US-style science-only fusion program, proceeding with an ITER that would be constructed abroad, or supporting ITER at a level such that it could be built in Europe. The research ministers favored pursuing the last two options simultaneously, according to observers.

"It's a big step toward proceeding with ITER," says Karl Lackner, who heads the European Fusion Development Agreement from Garching, Germany. "It comes in the wake of other steps, such as the proposal to consider Cadarache [the French nuclear research center] as a site. This sequence builds momentum."

Europe's ITER partners are Japan and Russia, the US having dropped out in 1998. Since then, the plans for ITER have been scaled down in size and cost (see *PHYSICS TODAY*, March 2000, page 65, and September 2000, page 56). At the soonest, construction could start around 2004, with operations beginning eight or so years later.

But fusion researchers' pleasure at the prospect of starting to build ITER is tempered by an overall cut in fusion funding. When the total Sixth Framework Programme had to be trimmed by 300 million euros to 17.5 billion euros, fusion took the brunt, losing 100 million euros. That cut is widely seen as being politically motivated, since Budget Commissioner Michael Schreyer is a member of Germany's Green Party, which opposes fusion energy.

Despite the cut to the fusion budget, Research Commissioner Philippe Busquin pumped up the amount earmarked for ITER, from 120 million to 200 million euros. Asked why by members of the European Parliament, Busquin said, "I think we have to think about this issue. We cannot postpone a decision [on ITER] any longer."

As it stands, the draft Sixth Framework Programme allots 700 million euros for fusion, including the ITER money, falling shy of the 788 million euros in the present budget, which runs through 2002. The European money covers about 40% of Europe's fusion research, with the rest coming from national budgets.

The shortfall is likely to pit ITER against other fusion projects, such as the Joint European Torus in the UK and the Wendelstein 7-X stellarator in

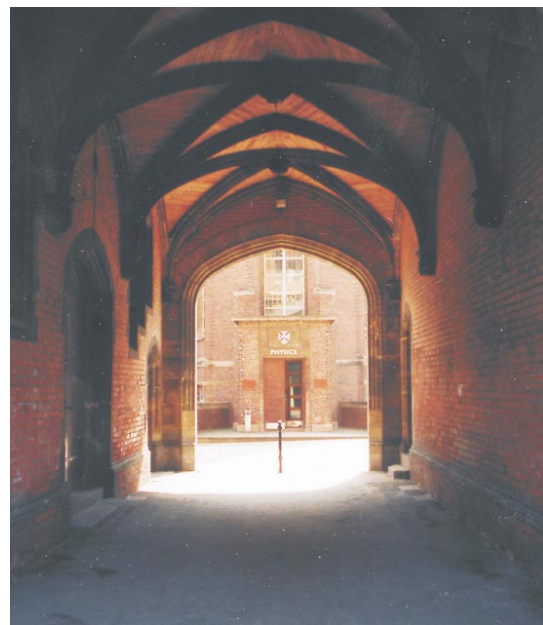
Germany. "It poses a real dilemma," says Lackner. "But the fact that ITER is specifically mentioned means we should use this budget to start something new."

There's a "fighting chance" that fusion funding will be upped, Lackner adds. The Sixth Framework Programme—whose main areas are genomics and biotechnology, information technology, nanotechnology, aeronautics and space, food safety and health risks, sustainable development and global change, and citizens and governance in European society—still has to wind its way through both the European Council, which includes strong proponents of fusion, and the European Parliament, which appears to be divided on this issue. Changes in both the amounts and areas of funding are likely.

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Belfast Boasts New Physics Center

Queen's University in Belfast is setting up a new physics center with £10 million (\$14.4 million) that it recently netted in competitive bidding by Northern Ireland's two universities. Funding for the International Research Centre for Experimental Physics (IRCEP) comes out of a £40 million initiative called SPUR (support for university research), financed equally by the region's Department of Higher and Further Education, Training, and Employment, and by university and private donors.



QUEEN'S UNIVERSITY physics is about to expand.

US Stamp Honors Fermi

A US stamp to be issued this fall will honor Enrico Fermi on the centennial of his birth.

The stamp shows Fermi in 1948 and a stylized carbon atom—symbolizing graphite, the form of carbon used to slow neutrons in the first nuclear reactor. In December 1942, a team led by Fermi used that pile of uranium and graphite bricks, which was built in a squash court under the University of Chicago's football stadium, to set off the first ever self-sustaining nuclear chain reaction.

Born in Italy on 29 September 1901, Fermi was a towering physicist in both experimental and theoretical nuclear and particle physics, and was awarded the Nobel Prize in 1938. He and his family used the trip to Sweden for the Nobel ceremony to leave Mussolini's fascist Italy and emigrate to the US, where Fermi joined the faculty at Columbia University and then moved to the University of Chicago to continue his work for the Manhattan Project. He died in 1954.

In other philatelic news, stamps commemorating 100 years of the Nobel Prizes, depicting prize founder Alfred Nobel and medals, were issued in the US and Sweden on 22 March.



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The IRCEP was selected because of the department's excellent research, its "major opportunities and ideas for expansion of research, and the most impressive range of collaborative research with institutions in many other countries," says UK Engineering and Physical Sciences Research Council Chair Anthony Ledwith, who served on the SPUR judging panel. SPUR also funded projects involving sonic arts, virtual engineering, and policy at Queen's University, and molecular biosciences and Irish cultural heritage at the University of Ulster.

The IRCEP will build on Queen's University's existing strengths in condensed matter physics and materials science, plasma and laser interaction physics, and atomic and molecular physics. "It's an absolutely fantastic opportunity for us," says physics chair Kenneth Bell. "The three research divisions are physically separated. This will let them come together and allow them to do collaborative research."

Most of the money will go for a new building abutting the current physics department. There won't be new faculty jobs. But, with the IRCEP meant to strengthen international collaborations as well as interdepartmental ones, there will be some funding for bringing in graduate students and visiting professors from abroad. "One of the difficulties we have is that we are very parochial. We are conscious all the time that we need to look outwards," says Bell.

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Elachi Named JPL Director

Capping a 30-year career at NASA's Jet Propulsion Laboratory, Charles Elachi will step into the top job on 1 May. He will succeed Edward Stone, who, after a decade at the helm of the planetary exploration lab, will return to research and teaching at Caltech, which runs JPL.

"I have in mind to keep JPL at the forefront, exercising boldness and ingenuity," says Elachi, listing projects "that are almost impossible": putting a permanent robotic presence on Mars, piercing the ice of Jupiter's moon Europa, exploring under extreme radiation environments, bringing home stardust from the tails of comets.

Elachi joined JPL in 1971, after earning his PhD in electrical sciences at Caltech. His bachelor's degree is in physics from the University of Grenoble, and he holds three master's degrees, including one in business administration from the University of Southern California.

Elachi specializes in radar and remote sensing. He heads the team that is imaging Saturn's moon Titan from the Cassini spacecraft. He is also involved in mapping Earth's surface with interferometric radar. That work, he says, "will definitely shed light on the physics of earthquakes. It could have dramatic scientific and humanitarian consequences."

"One of Elachi's biggest challenges will be to get JPL's estimates in line

with real costs—bidding low enough to win projects, but high enough to pay for them," says Mike Drake, who heads the University of Arizona's Lunar and Planetary Laboratory.

Elachi will have to continue with the "faster, better, cheaper" mode, says Edward Weiler, NASA's associate administrator for space sciences. "The revolution is not complete. There's always pressure to go back to the old way of business"—sending up fewer, larger, costlier missions—"but putting all of one's eggs in one basket is a dangerous way to do business."

The double debacle in 1999, when NASA lost two Mars missions, Weiler adds, means Elachi "has an advantage that most people don't have—he's known failure. It builds character and leadership."

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Shotter to Lead Canada's TRIUMF

Alan Shotter, an experimental nuclear physicist at Scotland's University of Edinburgh, will begin a five-year term this September as the director of TRIUMF, Canada's laboratory for particle and nuclear physics in Vancouver. He succeeds Alan Astbury, who is returning to particle physics research as a professor emeritus at the University of Victoria.

Last year the lab, which is federally funded and run by a consortium of five universities, won a budget increase of 20% to Can\$200 million (US\$129 million) over the next five years. Indeed, the lab's outlook is much better today than when

when Astbury took the reins in 1994. At that time, the Canadian economy was shaky and plans for a \$700 million particle accelerator at TRIUMF had been abandoned in the wake of the US cancellation of the Superconducting Super Collider. "TRIUMF came very close to being



ELACHI



SHOTTER