

R&D Budget Brings Modest Increases to Most Civilian R&D; NSF Takes a Hit

As in the past three US budgets, defense and homeland security received most of the federal R&D dollars. With the federal deficit at \$413 billion and climbing, most budget experts expect science funding to get worse before it gets better.

Office of Science Director Raymond Orbach was upbeat in the wake of congressional approval in late November of the massive omnibus appropriations bill. The bill contained a 4.3% increase in R&D money for Orbach's office; for the second year in a row his funding has gone up. Given years of flat funding for the Department of Energy's Office of Science, Orbach is a big winner in the fiscal year 2005 funding of science.

"I think we're very fortunate," Orbach said. "I thought that it was a wonderful example of the administration and Congress developing a plan that is good for science."

But Orbach's good cheer is the exception, not the rule, in a science budget that sees nondefense R&D increase 2.2% to \$57.2 billion. While that is better than the 1% overall increase for domestic programs, it is significantly less than nondefense science spending in recent years. And, according to budget analysts with the American Association for the Advancement of Science (AAAS), "if the Bush administration follows its deficit reduction plan outlined earlier this year, the next few years could see cuts for most R&D funding agencies" (see PHYSICS TODAY, August 2004, page 32). The budget numbers for FY 2005 R&D spending take into account an across-the-board cut of 0.8% that the administration and Congress implemented to hold down spending.

Evidence of the predicted bad times could be found at NSF, where Arden Bement, the newly confirmed director, wasn't nearly as cheery as Orbach. After six years of what Bement referred to as a "golden era" at NSF, the foundation got squeezed between the administration's Moon/Mars initiative and congressional efforts to strengthen veterans' benefits. The result is a cut of 1.9% to \$5.5 billion, \$105 million less than last year.

Bement, who coped with years of cuts while director of NIST, now faces the prospect of lean years in his new job at NSF. And the bad news came

just 19 months after President Bush signed legislation authorizing a doubling of NSF's budget over five years. That authorization has been described by Bush officials as a goal, not a mandate, and Bement was aware of the difference. "It's a lot easier to write an authorization bill than it is to appropriate funds to carry out the mandate," he said.

Bement restrained

But Bement was reserved in commenting on the cuts to the foundation. "As a nation, when you are working under a very constrained environment, it means difficult choices have to be made," he said. "We're having to make difficult choices internally and refocus on our priorities and be sure that we can . . . keep good balance in the programs and continue to support research at the frontier."

He was quick to point out that the NSF cut came from Congress, not the administration. "The administration asked for a healthy increase [3%] in the NSF budget," he said. "It was Congress that cut the budget." Representative Vern Ehlers (R-MI) called the NSF cut "shortsighted." In a statement following passage of the omnibus bill, Ehlers, a physicist, said that the US depends on technological innovation for its well-being, and NSF support of that innovation is "crucial to the sustained economic prosperity that America has enjoyed for several decades. This innovation is made possible, in large measure, by NSF support of basic scientific research, particularly in the physical sciences."

At an AAAS discussion of the impact of the 2004 presidential election on science, former Congressman John Porter (R-IL) told the crowd that, given the federal deficit of \$413 billion and Bush's pledge to cut it in half, "funding for research will have tough sledding" in the next few years. Instead of talking about how to increase science funding, Porter said, "we have to make sure that science doesn't pay more than its fair share in addressing

the deficit problem."

The R&D money will go to security and defense, he said, and the FY 2005 budget makes that clear. In overall terms the federal R&D budget is a record \$132.2 billion, a 4.8%, or \$6 billion, increase over FY 2004. But according to the AAAS analysis, 80% of the new money goes to defense-related projects in the Department of Defense, Department of Homeland Security (DHS), and DOE. "Total defense R&D climbs 6.8%, or \$4.8 billion, to another all-time high of \$75 billion and makes up 56.7% of the total federal R&D portfolio," the analysis says.

The revenge factor

One concern in the scientific community in the wake of the presidential election is that there will be "push-back" against scientists because of their unusually active support of Democratic candidate John Kerry. Bob Palmer, the Democratic staff director for the House Committee on Science, saw possible signs of it in the vote to cut NSF money. "The [scientific] community got involved and may be paying the price," he said.

When money is tight and there are competing interests, Palmer said, "people are not looking to hurt you, but also not looking to help." Programs and agencies in the omnibus bill that are traditionally identified with Democrats, such as the Environmental Protection Agency, housing, and NSF, "all did horribly," he said. NSF "tends to [put] money into urban areas and universities that are considered liberal," he said. Agencies and programs that are seen as more broadly drawn, or "less liberal," did better, according to Palmer. He included veterans' programs and NASA in that category.

John Marburger, director of the Office of Science and Technology Policy, said the strong support for Kerry in some parts of the scientific community didn't, and won't, have any influence on how funding decisions for science programs are made. "All of those [pro-Kerry] statements and petitions and letters and everything, that is a normal part of a public process in America, and it doesn't have any bearing on the way government makes its

decisions on how to spend money and what the priorities should be in science,” he said.

Marburger has taken the lead over the past several months in defending the administration against charges from the Union of Concerned Scientists that science policy has been politicized and against claims from a group of Nobel laureates that basic research has not been adequately supported (see PHYSICS TODAY, August 2004, page 32). “Scientists are human beings and they are citizens and they have their opinions and the right to express them, whether it is in a political context or not,” he said.

The various statements critical of the Bush administration “came because the science community was concerned and eternally vigilant,” Marburger said. “That’s a healthy sign and I don’t think it is going to affect their ability to provide good science advice and be good members of advisory panels and committees.”

Burton Richter, one of the Nobel laureates who worked publicly to put Kerry in the White House, said, “While some of the science community was unusually strong in its support of Mr. Kerry, Mr. Bush is our president and the science community is going to respond honestly to any requests the president makes. But I wouldn’t be surprised if the administration thinks less of the science community than it did before the election. Nobody likes to be criticized.”

The revenge factor aside, Marburger painted a less-than-rosy picture of the next few years for science funding. “I think it is pretty clear from the discussion around the omnibus bill that money is short and people should be prepared for flatter times ahead,” he said. “You are going to see a lot more budget discipline,” he continued, “and after the extraordinary run-up in science funding during the previous four years, I think almost any normal budget is going to be disappointing.”

While there are rumors about the administration’s FY 2006 numbers, most of them bad for science, for the moment the focus is on the FY 2005 numbers. Here are the agency highlights.

National Science Foundation. The 1.9% drop in the NSF budget, down to \$5.5 billion, is \$272 million less than the administration requested and well short of the \$7.4 billion that was projected in legislation signed in December 2002 authorizing a doubling of NSF’s budget by 2007. NSF R&D funding, which does not include education and training activities or overhead costs, is \$4.1 billion for FY 2005,

FY 2005 Federal R&D Programs

	FY 2004 estimate	FY 2005 request	FY 2005 approved	Percent gain (loss)
(millions of dollars)				
National Science Foundation				
Total R&D	4077	4226	4063	-0.3
Total research and related activities (R&RA)	4251	4372	4221	-0.7
Mathematical and physical sciences	1092	1116	1074	-1.6
Engineering	565	576	555	-1.9
Biological sciences	587	600	578	-1.6
Geosciences	713	729	702	-1.6
Computer and information science and engineering	605	618	595	-1.6
Social, behavioral, and economic sciences	204	225	216	6.2
US polar programs	342	350	347	1.4
Integrated activities	144	160	154	6.9
Major research equipment	155	213	174	12.1
Education and human resources R&D	137	132	130	-5.4
(Less non-R&D funding in R&RA)*	-467	-491	-461	-1.3
Department of Homeland Security				
Total R&D	1037	1141	1243	19.9
Science and technology	869	987	1047	20.5
Biological countermeasures	197	407	363	83.8
Chemical and high explosives	61	63	73	18.9
Radiological and nuclear	126	129	123	-2.9
Threat and vulnerability assessments	93	102	66	-29.2
Standards: state and local	39	40	40	2.4
Critical infrastructure	66	61	27	-59.2
University programs	70	30	70	0.6
Emerging threats	21	21	11	-48.5
Rapid prototyping	75	76	76	1.9
Antiaircraft missiles	0	0	61	—
Conventional missions†	34	58	55	61.7
National Biodefense Analysis and Countermeasures Center	87	0	35	-60.0
Cybersecurity	0	0	18	—
Other	0	0	31	—
Coast Guard	14	0	19	32.1
Department of Energy				
Total R&D	8804	8880	8956	1.7
Total science	3186	3172	3324	4.3
High-energy physics	734	737	736	0.4
Nuclear physics	390	401	405	3.9
Fusion energy sciences	263	264	274	4.3
Basic energy sciences	1008	1064	1105	9.6
Spallation Neutron Source	227	129	129	-43.2
Advanced scientific computing research	202	204	232	14.9
Biological and environmental research	590	502	572	-3.0
National Nuclear Security Administration (NNSA)	4156	4248	4209	1.3
Naval reactors	738	769	773	4.7
Weapons activities	3184	3261	3214	0.9
Science campaigns	249	301	277	11.3
Advanced simulation and computing	721	741	698	-3.2
Inertial confinement fusion	514	492	537	4.4
National Ignition Facility construction	149	130	129	-13.5
All other weapons activities R&D	1699	1727	1702	0.2
Nonproliferation and verification R&D	234	218	222	-5.2
NASA				
Total R&D	10 909	11 334	11 132	2.0
Total exploration, science, and aeronautics (ESA)‡	7830	7760	7681	-1.9
Space science	3971	4138	3992	0.5
Earth science	1613	1485	1505	-6.7
Biological and physical research	985	1049	1040	5.5
Aeronautics	1034	919	930	-10.1
Education programs	226	169	213	-5.7
Total spaceflight§	5875	6674	6581	12.0
Department of Defense				
Total basic research (6.1)	1404	1330	1489	6.1
Total applied research (6.2)	4415	3878	4836	9.5
Total R&D test and evaluation (RDT&E)	64 350	67 773	68 864	7.0
Army	10 168	9266	10 536	3.6
Navy	14 821	16 346	16 865	13.8
Air Force	20 236	21 115	20 682	2.2
Defense agencies	18 823	20 740	20 473	8.8
Defense Advanced Research Projects Agency (DARPA)	2821	3090	2960	4.9
Missile Defense Agency	7559	9147	8765	15.8
Chemical and Biological Defense Program	706	560	713	1.0
Defense Threat Reduction Agency	398	442	450	13.0
Office of the Secretary of Defense	1943	2333	2375	22.2
Other	5396	5168	5219	-3.3
Director of operational test and evaluation	302	305	308	2.1
Department of Commerce				
Total NOAA R&D	617	610	684	10.7
Total NIST R&D#	471	426	468	-0.5

*R&RA funds are not appropriated by NSF directorate. The FY 2005 approved directorate figures are American Association for the Advancement of Science estimates based on report language in the FY 2005 omnibus appropriations bill.

†Coast Guard R&D transfers into the Homeland Security conventional missions budget in the FY 2005 budget.

‡Formerly “science, aeronautics, and exploration” (SAE). NASA funds are not appropriated by program, and the numbers given here are AAAS estimates based on language in the FY 2005 omnibus bill.

§Spaceflight funds include a 19.5% increase for the *International Space Station* and 9.5% increases in both the space shuttle and the space and flight support programs.

||Includes classified programs.

#NIST’s scientific and technical research increased 16.2% to \$328 million.

Texas A&M Reaches for Stars

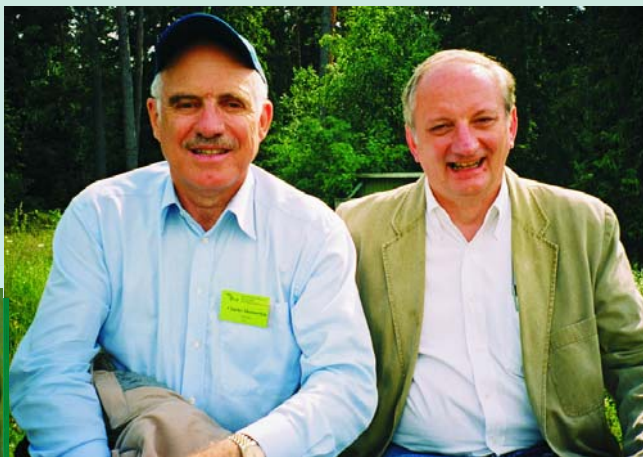
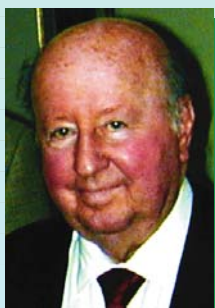
As part of a campus-wide explosion in faculty numbers, the physics department at Texas A&M University in College Station aims to launch a topnotch astronomy program.

Overall, the campus is increasing its faculty size by 450, or 25%, by 2008. Physics faculty will swell from 45 to 60, with at least four of the new positions slated for astronomy and cosmology. "This is the nation's fifth largest university, and our goal is to go from no astronomy program whatsoever to one of the world's leading programs in observational cosmology and astronomy," says Texas A&M physicist Roland Allen.

Two alumni are key to realizing the physics department's astronomy plans. George Mitchell, a real estate magnate and petroleum engineer, has given nearly \$7 million to the department. Charles Munnerlyn, a PhD in optical engineering and a pioneer in the development of laser vision correction, has contributed more than \$3 million.

After hearing Stephen Hawking say on National Public Radio a few years ago that his "biggest disappointment in 25 years was the cancellation of the SSC [Superconducting Super Collider]," says Mitchell, "I talked to people at A&M, and we arranged a meeting [with Hawking]." That led to Hawking's ongoing participation in a series of Mitchell-financed symposia at the university. Mitchell's donations also go toward, among other things, endowed chairs and participation in the Giant Magellan Telescope. Joining the GMT, one of several next-generation telescopes under discussion worldwide, "should help attract smart young people to A&M," says Mitchell. "I want to see A&M in general become a more prestigious university."

Will the university be able to realize its lofty dream of having a top-10 astronomy program? The idea goes back to a recommendation from an external review panel, says physics department head Edward Fry. "I think the university will jump through all sorts of hoops to hire extraordinary people." **Toni Feder**



Gifts from George Mitchell (left) and Charles Munnerlyn (above, left), astronomy enthusiasts and philanthropists, are helping Texas A&M University launch an astronomy program. Munnerlyn is shown with physics department head Edward Fry.

a decrease of \$14 million, or 0.3%.

The research and related activities (R&RA) account, which funds most of the foundation's research activities, was cut \$31 million, or 0.7%, to \$4.2 billion. Congress did increase funding for NSF's major research equipment and facilities construction (MREFC) account to \$174 million, an increase of \$19 million over last year but well short of the \$213 million the administration requested.

Two new projects—Rare Symmetry Violating Processes and Scientific Ocean Drilling—were funded to move forward. The National Ecological Observatory Network was not, although \$6 million was appropriated to keep the design stage going. The IceCube Neutrino Detector Observatory project at the South Pole received an increase from \$42 million to \$48 million. Earthscope and the Atacama Large Millimeter Array also received MREFC funding.

The cuts in most of the NSF research directorates will put more pressure on the already stressed funding of competitively awarded research grants, an issue that Bement said he is very concerned about. The funding rate in some of the directorates has

dropped below 20%, he said, "and that's very wasteful because it not only increases the burden on the investigators in writing proposals, but every proposal has to be evaluated whether or not it is funded. When the foundation was really functioning well, we had funding rates up closer to 30%. Now the average across the institution is more like 21%."

With a declining budget, Bement said, "we have to use management approaches to get the funding rate up." Those approaches include more definitive, focused solicitations and "in some cases we may have to restrict the number of proposals per institution or per department."

Even with restrictions, he said, a lot of proposals in the "very good" and "excellent" categories are not going to be funded. "In 2003, as an example, we left on the table about a billion dollars' worth of unfunded proposals that would have been funded if we'd had the resources," he added.

Department of Homeland Security. Though still a relatively new player in the science R&D funding competition, DHS is clearly a high priority for both the administration and Congress. In an appropriations bill

passed in October, DHS R&D programs received a whopping 19.9%, or \$206 million, increase. That pushes the R&D budget to \$1.2 billion, \$102 million more than DHS asked for.

More than 80% of the R&D money goes to the Directorate of Science and Technology, one of five directorates in DHS. The largest increase goes to biological countermeasures, which will have its budget nearly doubled to \$363 million. Another \$35 million was authorized to continue construction of a National Biodefense Analysis and Countermeasures Center at Fort Detrick, Maryland.

Department of Energy. While DOE's Office of Science emerged with its 4.3% budget increase, the overall increase in DOE R&D is a more modest 1.7% to \$9 billion—\$152 million more than in FY 2004. The total DOE budget is \$24.4 billion, an increase of \$582 million, or 2.4%, over last year.

DOE's defense-related R&D increases, according to AAAS, are up only 1.2% to \$4.3 billion. Congress pointedly did not appropriate requested funding for work related to developing a new generation of nuclear weapons. In a report accompanying the omnibus bill, Senate and House conferees said they

Hard Push for Soft-Matter Research at NYU

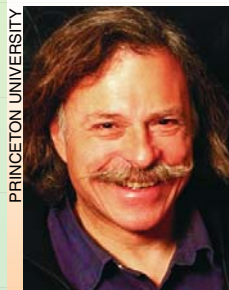
The creation of an interdisciplinary and international Center for Soft Matter Research makes physics the first field to get a boost from New York University's \$2.5 billion expansion plans. By hiring people in clusters rather than individually, according to NYU's dean of arts and sciences Richard Foley, "the university can achieve what is often very difficult: rapidly and effectively building academic strength in several fields in the arts and sciences."

The new center is intended as a counterpart to the Kavli Institute of Theoretical Physics at the University of California, Santa Barbara, says David Pine, who joined NYU from UCSB. "You have this model that's worked well for theoretical physicists. But not much has been attempted to make centers of this sort for experimenters," he says. Pine, along with Paul Chaikin, who is moving from Princeton University, and David Grier, who came from the University of Chicago, is guiding the formation of the center. NYU is providing an undisclosed sum for an initial eight full-time faculty positions, including two theorists, plus two positions for visiting scientists. The center will have to raise money for workshops and other activities.

"We are interested in broadening the theory, models, and techniques for studying complex systems," says Chaikin. "We are going to make [the center] a great place to do science, where people come from all over and attack problems together. New York is a great place to do this." Adds Grier, "Instead of a warren of labs, we are building a very large open space. That makes it easier to integrate visitors."

NYU physics has previously benefited by focusing on select subfields, says Allen Mincer, the department chair. After hiring several people in astrophysics and cosmology a few years ago, Mincer says, "I can already see the effects on the caliber of faculty, postdocs, and students we are attracting."

The university plans to devote \$200 million over the next few years to expanding the arts and sciences faculty by 20%. That, in turn, is part of a plan to raise \$2.5 billion for scholarships, new academic initiatives, and the enhancement of university facilities.



PRINCETON UNIVERSITY

Chaikin



UCSB PHOTO SERVICES

Grier



Pine

Toni Feder

would not provide \$9 million for "advanced concepts research on new weapons designs." They also said that "no funds have been provided for the Robust Nuclear Earth Penetrator," better known as the bunker buster nuclear weapon. Funding was also denied for selection of a site to build a new pit facility to increase the speed with which new nuclear pits can be manufactured. And no money was included to reduce the time it would take to prepare the Nevada Test Site for a resumption of nuclear testing.

In November 2003, the Office of Science unveiled an ambitious, 20-year priority list for developing 28 major research facilities, a plan that would require a 60% increase in the office's budget over the next five years (see PHYSICS TODAY, January 2004, page 23). While that is unlikely given the severe budget constraints, support on Capitol Hill for maintaining and upgrading existing facilities appears strong. The congressional conferees, in their budget report, encouraged DOE to "request sufficient funds for the Office of Science in FY 2006 to operate user facilities for as much time as possible, to enhance user support, and to upgrade essential equipment."

NASA. The space agency did well, receiving a 4.5% boost in its overall budget to \$16.1 billion. Most of the in-

crease is for returning the space shuttle to flight and for resuming construction of the *International Space Station*. Congress authorized up to \$428 million to begin development of a crew exploration vehicle, a proposed spacecraft that would take humans beyond low-Earth orbit and is part of the administration's Moon/ Mars initiative.

The price for those efforts is paid for in part by a reduction in the exploration, science, and aeronautics (ESA) account, which funds much of NASA's research. The ESA budget is down 1.9% to \$7.7 billion. While NASA has a unique ability to shift money between programs, making it difficult to know specifically how funds will be spent, AAAS estimates that NASA support of research could fall 5.5% to \$5.3 billion.

Department of Defense. The military R&D budget breaks all records at \$70.3 billion, a \$4.6 billion, or 7.1%, increase. Missile defense continues to be one of the big-ticket items, receiving \$8.8 billion as deployment of the system begins.

Basic research (6.1) and applied research (6.2) both increase, but primarily because of earmarks for research projects from Congress. Basic research will increase \$85 million to \$1.5 billion. Applied research will jump 9.5% to \$4.8 billion. The Penta-

gon had requested cuts in both research categories.

The Defense Advanced Research Projects Agency receives a 4.9% increase in its R&D budget to \$3 billion. That is slightly less than the \$3.1 billion DARPA requested. The biggest increase—23% to \$171 million—goes to DARPA's basic research program in Defense Research Sciences.

Department of Commerce. The administration asked for a sharp cut in the department's R&D budget, but Congress instead increased the budget by \$52 million, or 4.6%. The two major research agencies within the department, NIST and the National Oceanic and Atmospheric Administration (NOAA), ended up with significantly more than the administration requested.

NIST R&D drops by 0.5% to \$468 million, but that is better than the nearly 10% cut proposed by the administration. The drop in funding is a bit misleading because most of it can be attributed to the annual fight over the future of the Advanced Technology Program. The administration proposed for the third year in a row to eliminate the program, and the House agreed. The Senate won the fight, however, and provided \$136 million for ATP. That is a 24% cut, but enough

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to keep the program alive.

The research labs at NIST, suffering from a serious lack of funding in recent years, will receive a boost of 12.8%, or \$42.3 million, to \$373.4 million. While the increase is welcomed by the science community, it is actually less than the \$417.5 million requested by the administration.

NOAA R&D increases 10.7% to \$684 million thanks to a report by the US Commission on Ocean Policy recommending an increase in ocean research. The funding also creates a new scholarship program to attract more students to oceanic and atmospheric science.

Jim Dawson

Barring ITER Site Consensus, Europe Will Forge Ahead

Agreement on a site for ITER remains elusive, but in late November, the European Union's council of ministers gave its seal of approval to building the international fusion energy test reactor in Cadarache, France. That site is also backed by China and Russia, while South Korea and the US favor Japan's candidate, Rokkasho (see PHYSICS TODAY, August 2004, page 28).

The EU says it still prefers a consensus for the European site, but if that fails it will strike out independently, with whoever chooses to join. "Our mandate is a so-called triptych: Cadarache, six parties, and a broader approach," says Achilleas Mitsos, European Commission director general for research. The broader approach refers to compensating the candidate host that concedes.

The EU's decision to move ahead if no site consensus is reached is "a big step forward," says Paul Vandenplas, vice chair of the European Consultative Committee for Fusion. "Otherwise, something of major importance for mankind's future energy will be killed because of political deadlock. Japan knows that Europe is making a last desperate attempt to keep the six partners together."

Earlier in the fall, it seemed that the deadlock on siting ITER had eased. The deal for Japan, if it were to accept not being the host, was sweetened to include not only IFMIF, the International Fusion Materials Irradiation Facility, but "privileged" partnership, under which the country would receive more industrial contracts than correspond to its 18% contribution to building ITER. In that model, Europe would pay 58%, and the

four other member states would each put 10% toward the multibillion-dollar project. From that total of 116%, the extra money would go toward fusion facilities in Japan, such as upgrading the JT-60 tokamak or building an international computing center.

Despite those hints of nearing an agreement, the negotiations have become, if anything, stickier. The European negotiators "made a serious tactical error, assuming Japan would back out. Now the Japanese are mightily upset," says an observer close to the negotiations. Europe hasn't agreed to discuss the roles of host and nonhost independent of site, says Satoru Ohtake, one of Japan's negotiators for ITER. Instead, the EU insists on its own site, with the "cheapest possible" compensation for Japan, he adds. "They underestimate our determination."

For its part, the US remains "committed to the Japanese site," says Raymond Orbach, director of the Department of Energy's Office of Science. "I think it is essential that the six-party framework be maintained," he adds. "Think of the consequences [a breakup] will create for future international collaboration."

Financially, ITER could be built without Japan and its backers. France, Italy, Spain, and Switzerland have volunteered to up their contributions for a Europe-led ITER. But keeping the partnership intact is important, says Mitsos. "It will be a failure if Japan does not participate."

Intense negotiations continue. No firm deadline is in place, though observers generally expect a decision in the first part of this year.

Toni Feder

Oddone Named to Head Fermilab

Physicist Pier Oddone has been named as the next director of Fermilab and will take the post on 1 July 2005. Oddone, currently deputy director of Lawrence Berkeley National Laboratory (LBNL), will succeed physicist Michael Witherell, who announced in October 2003 that he planned to step down next July.

"I am delighted to announce the appointment," said Frederick Bernthal, president of the Universities Research Association, a consortium of 90 research universities that operates Fermilab in Batavia, Illinois. Oddone's "stature as a distinguished particle physicist, his experience in the scientific operation of another great national laboratory, and his

leadership abilities make him extremely well suited to keep Fermilab at the forefront of scientific excellence and to guide the lab during the critical years ahead."

Oddone, 60, a native of Peru, is the recipient of the American Physical Society's 2005 Panofsky Prize for inventing the Asymmetric B-Factory. His undergraduate degree is from MIT and he received his PhD in physics from Princeton University. He was director of LBNL from 1987 to 1991, and has been deputy director of scientific programs there since 1989. He was selected for the Fermilab directorship after a five-month search by a 19-member committee headed by physicist Neal Lane of Rice University in Houston, Texas.

Oddone told a meeting of the Fermilab staff that his "grand ambition" for the lab is that it become the site of the International Linear Collider (ILC). The proposed collider would create high-energy particle collisions between electrons and positrons and would provide a tool for addressing questions about dark matter, dark energy, extra dimensions, and the fundamental nature of matter.

"The laboratory is poised for a future that includes the premier experiment in flavor physics, potentially the premier program in neutrino physics, and strong participation in the LHC [Large Hadron Collider at CERN]," Oddone said in a written message to the Fermilab staff. "If our efforts are successful, our future may also include a new global facility [the ILC] at the energy frontier to complement the Large Hadron Collider."

Witherell said that "years of effort building and improving accelerators and detectors have laid the foundation" for a rich scientific harvest at Fermilab. "We are very fortunate that Pier will be leading Fermilab through the important and difficult tasks ahead." One of the difficulties Oddone faces is the flat funding for Fermilab. In fiscal year 2005 the lab received about \$291 million, a 1.2% increase over last year and less than the lab requested.

Witherell is returning to the University of California, Santa Barbara, to become vice chancellor for research.

Jim Dawson



FERMILAB

Oddone