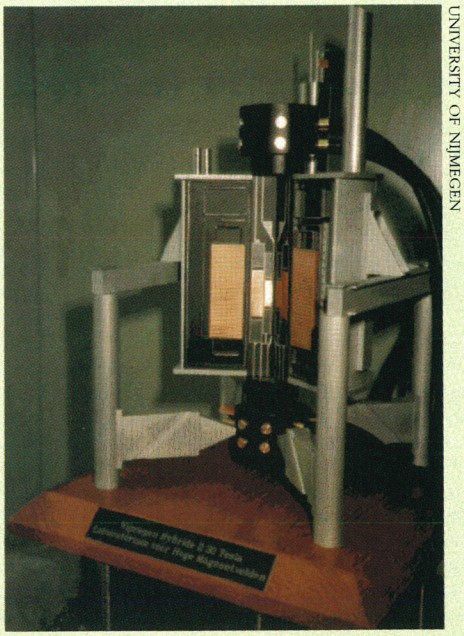
Dutch Magnet Lab to Get DC Upgrade, Pulsed Magnets

The Netherlands' High Field Magnet Laboratory at the University of Nijmegen is to get stronger steady-state magnets and also absorb the country's pulsed-magnetic-field research activities (now at the University of Amsterdam), according to a joint announcement issued in January by the University of Nijmegen and the Dutch Science Foundation, which will split the bill.

The upgrade, which will cost about 40 million guilders ($23 million) and is scheduled to be completed by 2001, will put the Nijmegen lab on a par with the world's top static magnet labs, located in Grenoble, France, where an upgrade is also under way; Tallahassee, Florida; and Tsukuba, Japan.

The Nijmegen lab will get a new building, and its power supply will be upped from 5 MW to 20 MW. Lab boss Jan-Kees Maan says the facility will produce static magnetic fields up to 34 tesla by using resistive magnets (up from 20 T now), and greater than 40 T (up from 30 T) by using hybrid magnets, in which a resistive magnet is nested in a superconducting coil.



UNIVERSITY OF NIJMEGEN

NIJMEGEN'S 30-TESLA HYBRID MAGNET (above) will soon be replaced by one that produces more than 40 T.

In addition, the Nijmegen lab will take over pulsed-magnetic-field research from the University of Amsterdam, which decided in November 1997 to stop funding such activities. Development and construction of pulsed magnets, however, will continue at the Amsterdam lab, which will soon start building a short-pulse (5 ms), high-field (80 T) magnet for Nijmegen.

Paul Frings, a University of Amsterdam physicist who had been overseeing the design and construction of a 60 T long-pulse magnet until the university dropped the plan, says given the alternative of closing, the merger "is probably the best solution. It makes sense for high-field activity to be located at one site. It will become much more visible, and researchers will be able to easily switch over from DC fields and do experiments with higher, pulsed fields." TONI FEDER

believe we can make a consortium of more than two or three countries—probably the best being a joint venture between Germany and France."

A 100 T contender

Frank Pobell, the director of the Rossendorf Research Center near Dresden, is among those who believe that a high-field magnet lab will more likely, and more quickly, be built if it's done on a national, rather than an international, scale. He should know: Pobell says he's aiming to submit a proposal this spring for DM 40 million ($25 million) to build a national magnet lab at Rossendorf by 2002.

If approved, the Rossendorf lab would start out with three magnets: a 100 T magnet, with a pulse length of 10–20 ms and a bore 20 mm in diameter (the space in which experiments can be performed); a 70 T magnet with a pulse length of 100–200 ms and a 24 mm bore; and a 60 T magnet with a pulse length of 1 s and a 50 mm bore.

Since 1992, following Germany's reunification, the Dresden area has been built up as a scientific center. And a key argument for siting a high-field magnet lab at Rossendorf is the prospect of using it together with a far-infrared free-electron laser that is scheduled to go on-line there next year. "The combination would be unique worldwide," says Pobell. "The radiation from our laser would match the magnetic excitations of many solids up to 100 T, so new high-field infrared spectroscopy experiments would become possible." The proposed magnet lab would be a joint undertaking of five local institutes: the Rossendorf Research Center, the city's two new Max Planck Institutes (for Physics of Complex Systems and for Chemical Physics of Solids), the Institute for Solid State Physics and Materials Research and the Technical University of Dresden.

The state government of Saxony has said it will pay half the cost of the magnet lab if the federal government will pony up the rest, says Pobell, adding that the chances for getting funding are "much better" under Germany's new Social Democratic–Green government, "because they promised more money for science and technology, particularly in the former East Germany."

Pobell sees Rossendorf someday becoming the European hub for pulsed magnetic fields. For that to happen, says Herlach, the German team "will have to work hard to acquire the necessary technology. But if their ambitious project is realized, they will certainly join the ELMF as a major partner." TONI FEDER

Dorfan Will Lead SLAC into Next Century

On 1 September, Jonathan Dorfan will take the reins at the Stanford Linear Accelerator Center. He will succeed Burton Richter, who this past November announced he would step down after 15 years (see PHYSICS TODAY, January, page 54).

A native of South Africa, Dorfan earned his bachelor's degree in applied mathematics and physics in 1969 at the University of Cape Town before coming to the US, where he earned his PhD in 1976 at the University of California, Irvine. He's been at SLAC ever since, and became an associate director, in charge of the B Factory, in 1994.

Indeed, Dorfan says, the B Factory, which is scheduled to go on-line in May, was one reason he chose to head SLAC, rather than accept an offer for the top job at Fermilab, where John Peoples will step down at the end of June. (A successor to Peoples was still being sought as PHYSICS TODAY went to press.) "It was an agonizing decision," says Dorfan. But after 10 years of working on the B Factory, he wanted to stay around and see it produce physics.

Scientists hope that the B Factory—which is named for the "bottom" quark—will shed light on the dominance of matter over antimatter. Says Dorfan, "We will collide electrons with positrons to produce very large numbers of bottom and anti–bottom quarks, and then watch for decays that violate the *CP* process. The idea is to understand the theoretical underpinnings of *CP* violation."

SLAC

JONATHAN DORFAN

As director, Dorfan will also oversee the upgrade of the lab's SPEAR 3 synchrotron, as well as fledgling plans for an international consortium to build a 35 km long linear collider (ten times longer than the Stanford Linear Collider). This "next linear collider" would collide electrons and positrons at energies comparable to those of the quark collisions planned for CERN's Large Hadron Collider.

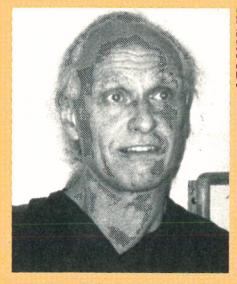
For his part, outgoing lab head Richter says, "I will go happily out of the director's office on 31 August." Richter wants to keep a hand in both science and science policy, and says that he plans to lobby the government to increase funding for science, especially for long-term research. For the country, as for a lab director, says Richter, "one of the most important things is not to let urgent things get in the way of important things."

TONI FEDER

New Physics Fellowship Honors Free Speech Activist Mario Savio

Mario Savio earned his place in history back in 1964, when, as an undergraduate at the University of California, Berkeley, he helped form the Free Speech Movement, to protest the administration's ban on political activities on campus. Over the course of several months, the movement staged rallies and sit-ins, and Savio emerged as a charismatic leader whose impassioned speeches, whether delivered from atop a police car or on the steps of Berkeley's Sproul Plaza, gave voice to students' outrage and inspired them to act. The Free Speech Movement became a model for the Vietnam War protests that followed. And Savio, who was suspended by the university and sentenced to prison for his activities, became a national symbol of the Sixties protest movement.

For readers of a certain generation, that piece of history is familiar. What is perhaps less well known about Savio, who died two years ago of heart failure at the age of 53, was his deep love of physics, which he pursued at San Francisco State University during the 1980s. Now, the SFSU physics and astronomy department has established a student fellowship in Savio's honor. Intended for undergraduates and graduate students who, like Savio, are returning to their studies "at an advanced age"—over 30, that is—"and after a significant break," the one-year, $15 000 fellowship is one of the largest offered by the school.



ANITA SLY

MARIO SAVIO

Savio's interest in physics was a longstanding one, says SFSU's Oliver Johns, who helped establish the new fellowship. As a high school student in New York City, Savio had been a Westinghouse Science Talent Search finalist, for a project on the propagation of sound in seawater, and he studied physics at Manhattan College and Queens College before transferring to Berkeley as a philosophy major. "I think that Mario returned to physics . . . partly because he was haunted by a sense of undeveloped potential," says Johns. "But he had a deep philosophical interest in physics as well."

Savio was "so talented, so severely honest, so penetrating in his investigations," recalls Johns. "He could have been a research physicist of the very first rank." But, after earning his BS (graduating *summa cum laude*) in 1984 and MS in 1989, Savio decided that his health was too fragile to pursue a PhD.

Instead, he took a teaching job at Sonoma State University. The school's director of graduate studies, Elaine Sundberg, was Savio's supervisor and soon became a close friend. "Mario was one of my heroes when I was in high school," Sundberg recalls. "And then, in 1990, he walked into my office, looking for a job. I was amazed." In addition to teaching math and logic, Savio developed seminar courses that combined philosophy, physics and literature.

Return to activism

After the Free Speech Movement was disbanded, Savio, always a reluctant leader, tried to avoid the political limelight. But in the several years before his death, he reemerged as an outspoken critic of California's Propositions 187 (which denies public health and educational services to undocumented immigrants) and 209 (which ended affirmative action in state-supported education, hiring and contracting). One of his last public battles was over a proposed student fee hike at Sonoma State. "It was a very divisive issue on campus," says Sundberg. "Mario felt that the administration was trying to intimidate students and faculty into supporting the fee increase." As a nontenured lecturer, Savio knew he was risking his own job security, Sundberg says. "But he was rarely motivated by self-interest." The fee hike was defeated.

Information about the Savio fellowship is available from the Physics and Astronomy Department, SFSU, 1600 Holloway Avenue, San Francisco, CA 94132; e-mail physics@stars.sfsu.edu.

JEAN KUMAGAI

Isolation Hampers Physics Teaching at Two-Year Colleges

Physics faculty at two-year colleges tend to be happy with their work and enjoy career stability, but they also experience "a widespread sense of separation from and lack of acceptance by the broader academic physics community," according to a recent report on physics education at US two-year colleges. Conducted by the American Institute of Physics and funded by the National Science Foundation, the report is based on a survey of the approximately 1000 two-year campuses (out of a total of 1800) where physics is taught, and it offers the first comprehensive picture of who teaches, and who takes, physics at those institutions.

About 2700 full- and part-time physics instructors are employed by two-year colleges (also known as community or junior colleges), and a majority of campuses have only one full-time physics instructor. Being the sole physics instructor means "you have nobody to talk to about physics or physics teaching," notes Tony Zito, a physicist at Dutchess Community College in Poughkeepsie, New York. "And there's nobody to back you up on what equipment or technical support you may need." It can also lead to a too-heavy teaching load. Even so, nearly three-quarters of the full-time faculty reported that they would "still choose to go into two-year college teaching."

During the 1996–97 academic year, about 120 000 students took physics at a two-year school. Many of those students eventually transfer to four-year schools, and yet, notes AIP's Michael Neuschatz, the report's senior author, "many university-based physicists regard two-year college instruction as lying outside the 'mainstream' of physics education." The types of physics courses offered at two-year colleges are similar to the introductory courses taught at four-year schools, the survey