Top physics labs 'must bury the hatchet'

[WASHINGTON] Michael Witherell, a physicist at the University of California at Santa Barbara, has been appointed director of Fermilab, the largest high-energy physics laboratory in the United States.

Witherell, an experimentalist and member of the National Academy of Sciences who pioneered the use of more powerful detectors and high-speed data acquisition systems in particle physics, will replace John Peoples as director of the laboratory at a critical time (see *Nature* **394,** 611; 1998).

Within six years the Large Hadron Collider will open at the European Laboratory for Particle Physics (CERN) in Geneva, and Fermilab's main injector, its largest experimental facility, will lose its place at the high-energy frontier of particle physics.

Together with Jonathan Dorfan, another young physicist recently named as the next director of the Stanford Linear Accelerator Center (SLAC) in California, Witherell faces the task of reinvigorating a US high-energy physics community still recovering from the 1993 cancellation of the Superconducting Super Collider (see *Nature* **365,** 773; 1993).

"Fermilab has a terrific physics plan for the next five or six years," Witherell said in an interview. "What happens after that is the big issue, not just for Fermilab, but for all of high-energy physics in the United States."

Witherell also thinks it is time SLAC and Fermilab, the primary centres of the discipline in the United States, buried their traditionally fierce rivalry. "I think it is a great opportunity that Jonathan Dorfan and I will be coming in at the same time."

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Witherell: challenges ahead for particle physics.

SLAC and Fermilab "need to work together", he says, and if they can't, "we shouldn't be directors". Witherell takes over at Fermilab on 1 July, and Dorfan assumes the directorship of SLAC from Burt Richter on 1 September.

Although Witherell lacks experience in managing a major facility, having spent his entire career with university teams at Department of Energy facilities such as Fermilab, he is familiar enough with the politics of the laboratories: for the past three years he has chaired the High Energy Physics Advisory Panel, advising the energy department on its $700-million particle-physics programme.

Witherell won't talk about Fermilab's long-term direction, saying only that both front-runner proposals for future machines there — a new lepton collider and a muon collider — "need to be looked at very seriously".

But the sensitive inter-laboratory relations the new director can expect to deal with were well illustrated last week with Fermilab's announcement that a team there had demonstrated direct CP violation — the asymmetry between matter and antimatter — more emphatically than before. The result will be published shortly in *Physical Review Letters*.

Fermilab's announcement drew an unusually direct public riposte from Konrad Kleinknecht, professor of physics at the University of Mainz in Germany. He issued a statement saying that a similar result had been found 11 years ago at CERN, and was subsequently "contested by an experimental group at Fermilab".

The Fermilab result "is a brilliant confirmation of the earlier observation at CERN, and deserves credit for that", Kleinknecht's statement said.

Bruce Winstein of the University of Chicago, spokesman for the Fermilab experiment, said the laboratory "had bent over backwards to be gracious to CERN", whose work was indeed discussed and credited in the Fermilab announcement.

But Winstein admitted that he hadn't noticed the headline on the Fermilab press release — "Fermilab physicists find new matter–antimatter asymmetry" — when he approved it.

Colin Macilwain

The search for missing mass finds funds for UK researchers

[LONDON] British efforts to discover the missing mass of the Universe are to receive a cash injection of £5.2 million (US$8.3 million) over the next four years in an attempt to consolidate Britain's position among the top research groups in the field.

Research into dark matter, which makes up 90 per cent of the mass of our Galaxy, has the personal backing of Ian Halliday, chief executive of the Particle Physics and Astronomy Research Council which is giving the money. Halliday believes it to be a field in which Britain could win a physics Nobel prize (see *Nature* 392, 217; 1998).

Neil Spooner, a spokesman for the British dark-matter project, a collaboration between Imperial College, London, the University of Sheffield and the Central Laboratory of the Research Councils, says the 20 per cent increase in funds is "excellent news" — although he acknowledges that a 60 per cent increase had been requested.

More funds, however, will be one of the outcomes if the group comes up with positive results. It has also applied to the government's £600 million Joint Infrastructure Fund for £3.8 million for new laboratory facilities.

British efforts to detect weakly interacting massive particles (WIMPs), believed to be a constituent of dark matter, are housed in Yorkshire, down a one-kilometre-deep disused salt-mine where background radiation levels are low; one of the biggest challenges for dark-matter researchers is in distinguishing WIMPs from natural background radiation.

The new funds will be used to build several detectors, including a 50-kilogram sodium-iodide detector, and two liquid-xenon detectors known as 'Zeplin'. The group also plans to develop a xenon-gas-based detector called 'Drift' to measure the direction of dark-matter particles.

Despite the cash injection, Spooner says, the British group remains less well funded than its two main competitors, a group at the University of Rome and one based on a collaboration between researchers at the University of California, Berkeley, and Stanford University.

None of the groups has so far claimed to have discovered dark matter. The US group has only recently overcome various technical problems with its cryogenic detectors, and is expecting to start gathering data this year.

The Rome group, which uses a 100-kilogram sodium-iodide detector, has recorded an apparent seasonal variation in its radiation counts, with more counts in summer than in winter, which is one indication of a dark-matter signal. But Peter Smith of the Rutherford Appleton Laboratory, the founder of the British group, says more research is needed before the variation is confirmed.

While welcoming the research council funds, one leading particle physicist believes that research grants should be driven by exciting science rather than Nobel prizes, which, he thinks may have outlived their relevance to the way science works today. "Science Nobel prizes are awarded to individuals. But much research today, particularly in particle physics, involves extensive collaborations," he says.

The difficulty of identifying suitable recipients, he adds, would be apparent if the UK group were to win the physics prize for discovering dark matter, as this group includes researchers from the United States, Russia and Italy.

Ehsan Masood