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## ISSUES AND EVENTS

### CERN chief rethinks LHC fees

The introduction of a fee to use the LHC is viewed in the US as breaking a deal and opening the floodgates to an unwelcome new paradigm for accessing scientific facilities.

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**Is it "stingy" and "unfair"** of the US not to contribute to the operating costs of the Large Hadron Collider? Robert Aymar, director general of CERN, the LHC's host laboratory in Geneva, Switzerland, has been quoted saying so in French and Swiss newspapers in recent months. Among US policymakers and scientists, the allegations are not meeting with much sympathy, but they are causing concern that the public airing could be harmful to science.

Aymar says the newspapers misquoted him. Still, he does think the US should help pay for running the LHC, which is set to go on line next year. Starting in 2008 or 2010, he notes, after the planned closures of, for starters, Fermilab's Tevatron and SLAC's BaBar, "the LHC will be the only frontier high-energy physics machine." Roughly 750 US researchers are involved in the LHC—the largest number from any country, says Aymar. Countries will benefit from the LHC in proportion to the number of physicists they have working on it, he adds. "That's why now is perhaps the time to review the conditions of participation, to see if it would be equitable to have a fair distribution of the cost of running the LHC, which is supported now only by [CERN's] member states."



Aymar

### CERN's responsibility



The US put in \$200 million toward building the LHC, plus \$331 million for two of the experiments. The contribution is useful, says Aymar, "but it's a very low percentage of the total cost of the LHC"—an estimated 8 billion Swiss francs (\$6.6 billion). From 2008 through 2011, says Aymar, CERN's budget will go exclusively to running the LHC and paying off

The Large Hadron Collider the lab's debt of about 1.2 billion Swiss francs. Running the LHC is expected to cost hundreds of millions of Swiss francs annually, he adds.

But under a 20-year agreement signed in 1997 by US research agencies and CERN, "the costs of operating the LHC are clearly CERN's responsibility," Robin Staffin, the US Department of Energy's associate director of science for high-energy physics, wrote in a recent statement. And the long-standing guidelines of the International Committee for Future Accelerators state that "operating laboratories should not require experimental groups to contribute to the running costs of the accelerators or colliding beam machines nor to the operating costs of their associated experimental areas." The costs borne by different countries even out if averaged over the past 30 years or so and over a broad range of facilities, says SLAC director Jonathan Dorfan, "not just in high-energy physics, but for neutrons, photons. I would hope that we don't disrupt the balance we have of providing open research facilities across international boundaries. The ICFA guidelines have served science well."

Another flaw in asking the US to contribute to running the LHC, says Barry Barish, who heads the planning process for the International Linear Collider, "is that [CERN] wants money, but the US wouldn't get a role in management. That's a hard sell." A role in management is what sets the ILC and, for example, the international fusion reactor ITER apart from US involvement in the LHC. With those projects, says Albrecht Wagner, ICFA chair and director of the German Electron Synchrotron laboratory (DESY) in Hamburg, "partners contribute to construction, operation, and exploitation from the start."

For his part, Aymar disputes Staffin's interpretation of the 1997 agreement, and says that "starting in 2007, we have no agreements whatsoever." He points to the words "future large accelerators and other scientific facilities are expected to be constructed, operated, and supported multinationally" in the preamble to the 1997 agreement to back up reconsideration of how to fund LHC operations. Globalization should begin now, he says. "It will be difficult to globalize the ILC if we don't make progress in the globalization of the LHC."

### **Good deal for US**

Physicists worry that taking the issue public could do more harm than good. "Once the politicians get involved, you don't know where it will lead," says a US government scientist who requested anonymity. "Congress, or perhaps individual science facilities, could decide to abandon open access and charge users to work at large facilities." Adds Wagner, "That would be disastrous."

Still, Wagner says, "the clear impression at CERN and in general in Europe is that the US got a very good deal [with the LHC]. For 500-something million dollars they get access to the frontline facility, and they will make use of it in very large numbers."

"I don't like to change the rules in the middle of the game," he adds. "But one can envisage other ways the US might contribute." For example, by improving the existing injector chain at the LHC, "you have the potential to increase luminosity. That might be an area where, as part of an upgrade, there would be fresh negotiations."

George Trilling, a high-energy physicist at the University of California, Berkeley, says he can see both sides of the LHC operations issue. "It's natural that CERN is looking for ways to alleviate its debt. Looking toward the future, I would like to hope that the US isn't too ungenerous in its approach, and that it has some flexibility."

**Toni Feder**



**The Large Hadron Collider** at CERN is scheduled to start up next year.

*Credit: CERN*

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