

# Germany seeks fusion plan compromise ...

**Munich.** The German ministry of research may be prepared to compromise on efforts to place a strict cap on funding for national fusion research. If so, the move may help to break a deadlock in year-long negotiations between the ministry and the Max Planck Institute for Plasma Physics (IPP) in Garching, over the funding of the IPP's new fusion reactor, the Wendelstein-7X, which is to be built in east Germany.

The Wendelstein-7X is the 'next generation' stellarator, one of several fusion reactor designs under test around the world, which will replace IPP's current stellarator, Wendelstein-7AS, in Garching. Its DM400-million (US\$275-million) investment costs are to be shared by Germany and the European Commission as part of the commission's fusion programme.

Construction of the reactor was approved by the programme's scientific committee last year, and detailed costings were approved by the commission in October. As part of the German government's post-reunification policy of siting all major new technological projects in east Germany, the reactor will be sited at Greifswald, in the north-eastern state of Mecklenburg-Vorpommern.

Mecklenburg-Vorpommern has agreed to pay the additional DM120 million required to provide an infrastructure on the 'green-field' site at Greifswald comparable to that which already exists at Garching. Half of the planned staff of 300 would move from Garching over the next few years.

But despite such previous agreements, the federal government has been dragging its feet. Jürgen Rüttgers, Germany's research minister, who took office in November last year, says that he inherited an agreement whose costs he considered to be excessive. He asked for the costs to be reassessed, even though fusion researchers argued that it was too late to change the technical specifications.

Tension became public in the autumn, when the federal government refused to pay out the first building costs of DM12 million for next year, to save money. The project was bailed out in October by Mecklenburg-Vorpommern, which plans to reclaim the money later from the government.

Tensions rose still higher last month, when Rüttgers was quoted in a newspaper interview as saying that he did not ask technical people how much money they wanted, but rather told them how much money the government was prepared to give them. He added: "Now they are saying that the money

is insufficient, and I simply don't understand this position."

The statement, coming during prolonged and tense negotiations over the stellarator project, caused consternation among fusion scientists. Klaus Pinkau, director of the IPP, says that the minimum costs had been checked and approved by the commission, and that "there were no hidden luxury costs like golden bath taps" to be negotiated.

Pinkau says that the basic issue is whether the rate at which the money is spent can be spread out so that it does not exceed the maximum spending target of DM200 million per year for fusion research that was set by the federal government in 1986. But, like other fusion researchers, he

is concerned that this target was never linked to inflation. Such a correction would have increased the spending target to DM270 million by 1996, he says.

But there are now signs that the government may be prepared to soften its original stand that the ceiling must not be exceeded. According to one ministry official, the government is prepared to accept that its total spending on fusion research will have to increase as from 1997, and has also agreed that the pace of the programme should not be reduced to spread out the costs. As a result, he says, and assuming no technical difficulties, the original goal of having the Wendelstein-7X operational in 2005 should be achieved.

**Alison Abbott**

## ...as US faces up to doubts over ITER

**Washington.** The US Department of Energy (DoE) is considering withdrawing from participation in the International Thermonuclear Experimental Reactor (ITER), a project widely considered as crucial for the future of fusion energy, following a one-third cut in its budget for fusion research.

Martha Krebs, the DoE's director of energy research, told her Fusion Energy Advisory Committee last week that, with little prospect for full-scale US participation in ITER's construction phase, continued US participation in the current engineering design phase should be questioned as well.

With the DoE's fusion budget expected to remain between \$200 million and \$250 million for several years, she said after the meeting that it was "highly unlikely" that the United States would participate in the construction of ITER. "Then you might say, why should we do the EDA [energy design analysis], or how can we do it in a way that could support our base programme?"

But Krebs admitted abandoning ITER would cause concern in the White House, whose science advisers are still keen that the United States should be seen as a "reliable partner" in international science projects.

The United States currently contributes \$70 million a year to the ITER engineering design activity, which is being carried out jointly with Europe, Japan and Russia, and is scheduled to conclude in 1998. No decision has yet been taken on whether to build the test reactor, which is estimated to cost around \$10 billion.

Faced with becoming a second-rate fusion power, the United States may have to find a 'niche' role in global fusion efforts, warned Anne Davies, associate director for fusion energy in the DoE's Office of Energy Research. The European Union will spend about two-and-a-half times more than the DoE's \$244 million on fusion research this year, and Japan will spend roughly 50 per

cent more than the United States. Russia spends less, but virtually all of its programme is focused on ITER.

Despite the importance of ITER to the future of fusion, Davies insists that she "would never recommend" devoting the entire US fusion budget to ITER construction. "I could see us carrying a \$50 million [component] into ITER construction," she added. "[But] our partners would have to decide whether it is worth having us as a partner for such a limited contribution."

Davies also revealed that her office had drafted a plan for an experimental reactor that would cost roughly half ITER's estimated \$10 billion. But she said that her counterparts from the other ITER participants had given her the cold shoulder when she had approached them informally with the idea. They showed no interest in discussing the "downscoped" project, she said, calling the plan a "non-starter".

According to Davies, the study, which cost around \$700,000, concluded that a tokamak reactor with conventional copper coil magnets could be built for around \$4 billion. But this would only be capable of performing half of ITER's experimental role, namely studying the physics of ignited plasmas. The other function to be carried out by ITER — the development of materials and technologies required for a working fusion power reactor — would not be addressed by the less costly device.

The DoE study resulted from a recommendation last summer by a panel of the President's Council of Advisers on Science and Technology (PCAST) that ITER be scaled down to halve its costs, thereby allowing full US participation within constrained budgets (see *Nature* 377, 567; 1995). The recommendation has stunned and upset the other ITER parties, whom Davies acknowledges remain committed to proceeding with the full-scale experiment.

**Dave Kramer**



**Rüttgers: wants check on stellarator costs.**