SSC DETECTORS

Russians to the rescue

San Francisco

SOVIET scientists have announced their intention to contribute $200 million worth of support to one of three US consortia hoping to win contracts for the construction of the Superconducting Super Collider (SSC)'s giant particle detectors. This contribution to the SSC is much the largest to be registered so far from outside the United States.

The Soviet offer was announced at the end of last month by Michael Marx, professor of physics at the State University of New York at Stony Brook, who is coordinating the EMPACT/TEXAS consortium. (EMPACT stands for Electrons, Muons and Partons Using Air Core Toroids.) Marx reported that a draft agreement to provide up to $200 million worth of "in-kind" support to his group's project was signed by Nikolai Tyurin, vice director of the Soviet Union's Institute for High Energy Physics (IHEP) in Protvino, 60 miles from Moscow. The EMPACT project includes 200 US scientists, as well as Brazilian and Mexican collaborators.

Budget and planning decisions about the SSC itself are still up in the air, but plans for two large particle detectors are moving ahead, because their construction may take nearly as long as construction of the SSC itself. Planners hope to have the 54-mile accelerator, to be located outside Dallas, Texas, built and running by 1999 at a cost of about $8,250 million.

So far, three groups of physicists have expressed interest in building a detector. They are now preparing 'letters of intent', and the SSC's Program Advisory Committee will recommend two of the three for approval, perhaps as early as December. Each approved group expects to receive from general SSC funds about half of the $500 million cost of building a detector. The remainder is to come from foreign contributions.

Leaders of each of the three groups report that they are working on multinational collaborations, which include Soviet scientists, and that they expect to receive in-kind contributions from the Soviet Union and elsewhere if their proposals are approved. But so far only Marx's group has a firm promise of large-scale Soviet support. Tyurin leads a team of about 120 scientists at 12 Soviet institutions who would take part in the project. Physicists from IHEP, the USSR's largest high-energy physics laboratory, have already collaborated successfully on the D_0 detector project at Fermi National Accelerator Laboratory in Batavia, Illinois, where they have provided both equipment and scientists.

Although the agreement for Soviet contribution to the EMPACT/TEXAS detector is between scientists, not governments, Marx said his group has discussed the project with Soviet government officials, and fully expects their cooperation if the project is approved. Details of the Soviets' contributions have not yet been established, but the $200 million figure is based on the expectation that participation will be in proportion to the number of scientists involved in the project.

The competing groups must, in their letters of intent, present a "plausible" plan for the funding of their projects, said Jack Sandweiss, Yale University physicist who chairs the Program Advisory Committee. The Committee will meet in mid-December to evaluate the letters of intent.

The EMPACT/TEXAS detector is a relatively specialized one, particularly suited to searching for the elusive Higgs particle, which Marx expects to be produced at a rate of fewer than 100 per year.

Other projects competing for approval are the Solenoidal Detector Collaboration (SDC) led by George Trilling of the Lawrence Berkeley Laboratory of the University of California, and the Lone Star Detector headed by Samuel Ting of the Massachusetts Institute of Technology.

Over 500 physicists are participating in the SDC project, according to Trilling, including about 300 Americans, 90 Japanese, about 60 Soviets as well as Canadians and Europeans. The SDC is the only project considered a "general purpose" detector, and would have very broad abilities to track all the particles produced by the SSC's proton collisions. Ting's proposed detector, which would specialize in the detection of muons, electrons and positrons, involves about 1,000 people, including 200 to 300 Americans, 300 Soviets and an array of Europeans and Asians. Ting expects that many of the countries that now collaborate with him on the Large Electron–Positron (LEP) collider outside Geneva will also contribute to his SSC detector if it is approved. He said his group's proposed SSC detector will be "similar in philosophy" to the detector that he directs at LEP.

After two of the detector groups are selected, they will be asked to develop formal proposals over the course of about a year, and the group leaders predict that detector construction will begin between late 1991 and late 1992. Foreign governments are not expected to make any official commitments until the two projects have been approved. Nevertheless, Marx, who admits his group began as a "tremendous underdog" in the competition, says he is very optimistic since his Soviet colleagues have been willing to put pen to paper in support of his group's plan.

Elizabeth Schaefer

SCIENCE BOOKS

Million-dollar quark

Washington

ALL previous records for a publisher's advance on a science book have been broken in an international auction that has already gathered more than one million dollars for rights to a book planned by Nobel laureate Murray Gell-Mann, professor of theoretical physics at the California Institute of Technology.

According to Gell-Mann's agent, John Brockman, who is based in New York, advances for *The Quark and the Jaguar: Adventures in the Simple and the Complex* are "way over a million dollars" for just the US and German rights, sold to Bantam Books and R.Piper respectively. In a series of auctions, Brockman has sold the book to publishers in 11 other countries, including Macdonald in the United Kingdom and Editions Albin Michel in France.

"Five years ago if you had asked me if a book like this would be the hit of the Frankfurt Book Fair, I would have thought you were crazy", says Brockman. But the success of Stephen Hawking's *A Brief History of Time*, changed publishers' perceptions of serious science books. Precise sales figures for Hawking's book are difficult to come by, but his British publisher, Bantam UK, says that "about 250,000 copies" were sold in Britain, and "around a million" in the United States before the book went into paperback this summer.

Brockman points to the success of James Gleick's *Chaos*, Richard Feynman's autobiographical books, Roger Penrose's *The Emperor's New Mind* and Clifford Stoll's *The Cuckoo's Egg* as evidence of a trend towards success for "books with serious content". All of these spent months on the *New York Times* non-fiction best-seller list.

So great is the confidence in the popularity of science that Gell-Mann's book was sold on the basis of a 32-page proposal alone. He intends to complete the manuscript by the spring of 1992 for publication by autumn 1992. The book is described as "a personal voyage of scientific discovery", which will go beyond Hawking's description of the attempt to formulate the fundamental laws of physics and, Gell-Mann says, "try to answer the question: What if we know these laws? What comes next?"

Recovering a multi-million dollar advance may not be as difficult as it seems. Brockman points out that with a 15 per cent royalty (a cut above the 5 – 10 per cent payable to less royal authors) on a $20 book, sales of only around 300,000 — far less than those attained by *A Brief History of Time* — are needed before the work goes into paperback. That is, of course, if a new fad has not come along by the publication date in autumn 1992.

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