

Key decision nears on proposed Argonne photon source

Even as plans advance for the European Synchrotron Radiation Facility (PHYSICS TODAY, December, page 65), a proposal for a similar but somewhat more energetic light source at Argonne National Laboratory is gathering steam in the United States. The Federal budget for 1986-87 contains about \$3 million in R&D money for an "advanced photon source," and in mid-November a large meeting of synchrotron users took place at Argonne to discuss synchrotron research and desirable specifications for the new machine.

Speaking at the meeting of some 300 university, industry and laboratory scientists from the United States and abroad, US public officials were unusually outspoken about the merits of the project, considering that it still awaits final approval at the Department of Energy and still must go to Congress for authorization.

"This project is going to provide a brand new source of x rays of a very high quality that will enable experiments to be done that have never been done before," said Louis Ianniello, DOE deputy associate director for basic energy sciences.

Background. A committee established by the Department of Energy to review synchrotron radiation sources recommended in late 1983 that a 6-GeV ring be built, starting in 1987, at a national facility. The following year the National Research Council's Seitz-Eastman committee on major facilities in materials research recommended as its first priority the construction of a 6-GeV synchrotron radiation facility equipped with new insertion devices and capable of producing maximum brightness in the 10-keV region.

In late 1985 DOE's Energy Research Advisory Board reviewed and endorsed the Seitz-Eastman recommendations, whereupon DOE established an Advanced Photon Source Steering Committee under the chairmanship of Peter Eisenberger of Exxon Research and Engineering Company to do a design study for the proposed facility. The

committee sponsored a workshop on machine design, which was run by Robert Siemann of Cornell University and Herman Winick of the Stanford Synchrotron Research Laboratory, and formed a panel under the joint chairmanship of Jules Godel of Brookhaven National Laboratory and James M. Paterson of SLAC to do a site-independent schedule and cost study for the proposed facility. By the time this panel had completed its work, DOE had settled on Argonne as the site for the proposed facility, and an Argonne group headed by Kenneth Klier (now at Purdue) had finished a conceptual design report. This report was subjected to a standard detailed DOE review and approved with minor changes in March.

For planning purposes, DOE by this time had packaged the advanced photon source into a "Scientific Facilities Initiative" with three other major projects: an advanced light source for Lawrence Berkeley Laboratory, a relativistic heavy-ion collider for Brookhaven National Laboratory and a neutron source for Oak Ridge National Laboratory.

The first construction money for the 1-2-GeV Berkeley synchrotron light source was included in the 1987 budget, and the Brookhaven relativistic heavy-ion collider may be eligible for construction funds in the 1989 budget. Eisenberger is hopeful that DOE might

include construction money for the Argonne advanced photon source in its budget request for fiscal 1988. "I can think of no other proposal in materials science that has been so thoroughly reviewed," he says. At the same time, Eisenberger is taking nothing for granted, given Washington's current deficit-consciousness.

Energy upgrade. Current plans anticipate that major construction might start in 1988, and the machine could be finished 4½ or 5 years later if there is no slippage in the schedule. Given that schedule, it is anticipated that the machine would cost about \$375 million. The estimate includes funds for facilities such as an auditorium and 15 beam lines.

Thomas H. Fields, the acting director of the Argonne design group, says that the latest design is for a 7-GeV rather than a 6-GeV machine. The higher energy would provide much more tunability, and the new design was endorsed at the recent synchrotron users' meeting at Argonne.

David Moncton of Exxon R&E, Eisenberger's successor as head of the synchrotron users' steering committee, strongly supports the higher energy. Moncton believes that the best tunability of the undulators can be achieved at 7 GeV, and he thinks the Europeans would do well to reconsider their proposed energy of 5-6 GeV for ESRF.

—WILLIAM SWEET

Marchuk is president of Soviet Academy

Guri I. Marchuk, a mathematician and leading science administrator, is the new president of the Soviet Academy of Sciences. According to the Soviet press agency Tass, he was elected in a secret ballot at a general membership meeting of the academy last October. Tass said that Marchuk was known for his "efficiency, high sense of responsibility and tremendous capacity for work" and characterized him as "sociable, accessible, mobile and always willing to heed

the opinions of other people."

Marchuk's research has ranged freely over large areas of computer science and applied science, including the modeling of nuclear reactions, the atmosphere and the oceans. In the last 10 or 15 years he has taken an especially strong interest in mathematical modeling of the human immune system, and he is well known to US scientists who have worked in that area. Charles DeLisi, director of health and environ-