

state & society

Sakharov exile triggers reaction in US physics community

In the weeks following the internal exile of theoretical physicist Andrei Sakharov, the Soviet Union received strong criticism from the US physics community. Coming on the heels of the Soviet invasion of Afghanistan, the action taken against Sakharov served to undo much of the progress that has been made in scientific cooperation between the US and the USSR.

Sakharov was exiled in January from Moscow to Gorki, a city about 250 miles from Moscow that is closed to foreigners. His banishment order forbids him any contact with foreigners, including letters or phone calls, as well as contacts with "criminal elements" (read dissidents). Sakharov must report to the police every ten days for a review of his conduct, and his visitors are questioned by the police. In addition, he and his wife have received various threats for their refusal to submit to their silencing without a trial.

Sakharov was officially accused of telling Western diplomats and journalists state secrets related to his work on the Soviet hydrogen bomb, though the exile came soon after he publicly criticized the Soviet Union for its aggression in Afghanistan. Sakharov won the Nobel Peace Prize in 1975 but was not allowed to leave Russia to receive it.

Although at the time of his exile Sakharov was stripped of all of his state honors, his membership in the Soviet Academy of Sciences had been spared, allowing him to continue receiving the Academy stipend and presumably protecting him somewhat. Because Academy membership can be revoked only if two-thirds of the members vote in favor, several US physicists have called upon their Soviet colleagues to support Sakharov's continued membership.

The same day Sakharov's exile was announced, the Soviet Academy of Sciences announced the resignation of V. A. Kirillin, chairman of the State Committee for Science and Technology and cochairman of the Joint US-USSR Commission for Science and Technology. Kirillin was considered by Westerners to be a moderating force in the Soviet scientific establishment. Although there is no evidence of a connection, Western observers are finding the notion that the Sakharov exile and the Kirillin resignation are unrelated



Andrei Sakharov and his wife, Yelena Bonner, have been fighting attempts by the Soviet government to silence their public statements on human rights violations. Photo courtesy of Newsweek.

a bit hard to swallow.

Among the individuals who have sent critical messages to Soviet leaders are Philip Handler, president of the National Academy of Sciences, the officers of the American Association for the Advancement of Science, the officers of The American Physical Society (see page 109), the presidents of five major US universities and 25 Nobel Prize winners.

The Afghanistan invasion and Sakharov exile have brought what had been a steady flow of US-USSR scientific exchange to a slow trickle. The Administration's official policy on such exchanges, announced by the State Department shortly after the Afghanistan invasion but before the Sakharov exile, defers all high-level, bilateral exchanges, and permits working-level exchanges to continue only on a selective basis. Also affected are high-technology exchanges.

In accordance with these guidelines, SLAC postponed a joint conference on storage-ring instrumentation, originally planned for this month. Also postponed was a meeting of the US-USSR steering committee on magnetohydrodynamics, scheduled for 21 January in Moscow.

The shipment of an MHD channel built in the US especially for testing in a Russian MHD facility has been held up indefinitely in accordance with the State Department directives. The Department of Energy is now looking into the possibility of using the \$10-million hardware in a US facility.

Among the arguments made for continuing limited scientific relations with the Soviets are that:

- ▶ We should preserve the framework, the institutional structure, of the exchange process so that, if circumstances again warrant, we can turn the system back on as readily as possible;
- ▶ We should not punish individual Russian scientists, who had no part in the Sakharov exile, and we may be able to influence some Soviet scientists if we have the chance;
- ▶ While in the Soviet Union, we can interact with dissident scientists, and
- ▶ The exchanges provide us with an otherwise unavailable window on the inner workings of the Soviet research machine.

For one or more of these reasons, the Committee of Concerned Scientists has

cosponsored with the New York Academy of Sciences an International Conference on Collective Phenomena in April, to take place at the Moscow home of refusenik physicist Viktor Brailovsky.

Kip Thorne, a Caltech theorist, has chosen not to interrupt a decade-old joint research program in gravity-wave research with Vladimir Braginsky of Moscow State University. "Of all the channels of communication between Russia and America, the strongest and least noisy is that between individual scientists. It is especially important, when other channels are breaking down, to keep the scientist-to-scientist channel open by maintaining a modest amount of person-to-person contact," Thorne explained.

Congress has also responded to the exile of Sakharov. Representative George Brown Jr (D-Cal.), chairman of the House subcommittee on science, research and technology, introduced legislation in January calling for a one-year halt to formal scientific exchanges with Russia. His bill would substantially curtail only official exchanges, that is, those arranged for under our bilateral agreement with the Soviets. Individual exchanges will be left to the discretion of the individuals involved, though, as one subcommittee staffer pointed out "it places the onus on the scientist who chooses to go to Russia; he is the one who should justify his actions."

The bill implicitly recognizes certain exceptional circumstances, such as the need to continue ongoing experiments. The moratorium would also not apply to

multilateral meetings, such as last month's international Scientific Forum in Hamburg.

The Scientific Forum is "a meeting of leading personalities in science" from the 35 countries that signed the 1975 Helsinki Accord, "to discuss interrelated problems of common interest and to promote the expansion of contacts, communications and exchange of information between scientific institutions and among scientists."

The American delegation to the Forum, led by Philip Handler, was under great pressure to boycott the meeting (PHYSICS TODAY, January, page 11) even before Sakharov's exile, because it was the Soviet Union's response to the Helsinki Accord that was largely responsible for the imprisonment of physicist Yuri Orlov, computer scientist Anatoly Scharansky and 18 other members of the Helsinki Watch Group (PHYSICS TODAY, July 1978, page 61). Handler explained his reasons for attending the Forum in testimony before Congressman Brown's subcommittee: "... It presents an opportunity to raise fundamental issues with Soviet counterparts and with the representatives of 33 other countries. There should be no mistaken impression that I will lead a delegation to discuss 'business as usual'... If instead, we were to boycott the Hamburg meeting, it would have little effect on the Soviet Union except to exempt them from this single opportunity for an international examination of Soviet actions in the light of the Helsinki Accords..." —MEJ



Very Large Array radio telescope. All 28 dishes have been built and are now being installed in a Y-shaped arrangement at the site near Socorro, New Mexico. When completed (probably by the end of the year), the VLA will have a maximum resolution, depending on its operating frequency, of 0.1–0.5 arc-sec. NSF expects to provide \$5.2 million in FY 1981 for the operation of the Very Large Array.

longer available to provide investigators with the resources required to carry out their research in an optimal manner. Physical scientists accepted for funding by the NSF characteristically are offered only about two-thirds of the support they request, Klemperer said, not because NSF feels the proposals are artificially inflated, but because there is not enough money to go around. While this does not prohibit the researcher from carrying out his experiment, he typically does so under less than ideal circumstances. Klemperer said that he realized that this situation can not be reversed in just one year, but his directorate will make some attempt to increase the size of the individual awards in FY 1981.

Physics. 1980 was anything but a windfall year for physics funding at NSF. A budget that was generally regarded as austere for physics was cut even lower by Congressional action and internal directives, so that the current plan for physics spending in 1980 is about 1% lower than the original budget request. All subfields except theoretical physics and gravitational physics were reduced to accommodate the lower overall total.

In the 1981 budget, real growth is planned for gravitational physics and theoretical physics, each getting a 22% boost. (See table on following page.) The \$0.7-million increase for gravitational physics will be used mainly for experimental projects, such as the development of gravitational wave receivers, prototype studies of wide-band gravitational radiation detectors, and development and production of low-noise transducers and amplifiers for narrow-band devices.

The theoretical-physics budget will increase also, as the Institute for Theo-

NSF requests 16% boost for physics

In his Fiscal Year 1981 budget request President Jimmy Carter continued his administration's policy of strong support for basic research. Support for all R&D is expected to total \$36.1 billion in 1981, an increase of \$4.2 billion over FY 1980, and obligations for basic research are estimated to be \$5.1 billion in 1981, an increase of \$543 million. Even subtracting the government's 9% estimate of cost-of-research increases in that period, this still translates into a real growth of 3% for basic research and 4% for all R&D.

In his briefings on the new budget, Presidential science adviser Frank Press noted that, with the inclusion of the 1981 budget, the increase in support of Federally funded basic research since Carter has been president amounts to 40%, or about 9% growth above increased costs. Press also pointed out, however, that over the 13-year period 1967–80, support for basic research in the physical sciences dropped 14% in constant dollars while support for basic life-sciences research grew 19%. "To compensate for the real contractions in the support of physical sciences and mathematics since 1967," he

said, "special attention has been paid to budgets for these activities in several Departments and agencies."

Basic research support in the new budget would increase by 17% in the National Science Foundation, 13% in the Department of Energy, and 21% in the Department of Defense.

NSF. Obligations for the conduct of R&D in the NSF are estimated to total \$1.06 billion in 1981, including \$952 million for the support of basic research. To compensate for the real contraction in the support of the physical sciences and mathematics since 1967, NSF support in these areas would increase by 17% in 1981. In the physics division, support would increase 16%.

Within the Mathematical and Physical Sciences directorate, NSF will try to increase the average size of the awards made to investigators, including young researchers and postdoctoral fellows. William Klemperer, Assistant Director for Mathematical and Physical Sciences, told PHYSICS TODAY that support for research in his directorate has eroded to the point where adequate funding is no