

In addition, Nova is the prime candidate, says Price, to achieve significant thermonuclear burn, which will allow simulated nuclear weapons effects testing to be done in the laboratory. "I consider it imperative that construction funds be appropriated in FY 1981 to keep the project on schedule," Price said.

Glass lasers at Livermore and at KMS Fusion, Inc (in Ann Arbor, Michigan), have been converted to short-wavelength (0.5-micron) operation. DOE is currently contemplating wavelength conversion down to one quarter of the characteristic neodymium-glass laser wavelength. This would permit the simulation of beam-target interaction for the very short-wavelength gas lasers, such as krypton fluoride, years before such lasers could be scaled up to comparable beam power on target.

Although the major glass laser experiments are conducted on the Shiva laser system at Livermore, smaller glass lasers are in operation at the University of Rochester and the Naval Research Laboratory. Livermore will act as a lead laboratory, coordinating the experimental work done on these machines with its own.

DOE plans to spend 40% more on CO<sub>2</sub> gas laser experiments in 1981, bringing that budget to \$41 million. Construction is continuing at Los Alamos on the Antares High-Energy Laser Facility, a carbon-dioxide gas laser that is to produce 50–100 terawatts in pulses of one nanosecond or one quarter nanosecond duration, respectively. The FY 1981 budget request for Antares is \$14 million.

Construction of a major upgrade of the Particle Beam Fusion Accelerator at



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Sandia, denoted PBFA II, will receive \$5 million in 1981 and is proceeding on schedule. Sandia is working on a more powerful design for PBFA II than was previously envisioned, based on new developments in the component technology. The particle-beam driver budget is up 25% in this budget, to \$15 million. During FY 1981 major experiments at the 30-TW, 1-MJ level will be conducted on PBFA I. If final focusing conditions are successful, this facility will allow significant thermonuclear burn (energy gain of 1–10%) to be achieved during FY 1981 or FY 1982.

Other ongoing construction projects in inertial-confinement fusion include target-fabrication facilities at Los Alamos (\$7 million) and at Livermore (\$5.5 million).

The budget for advanced driver development, sharply increased in 1981, includes funds for scaling experiments on rare-gas halide excimer laser test beds and heavy-ion fusion research at the Lawrence Berkeley Laboratory, Argonne and Brookhaven. But DOE may have some trouble convincing the Armed Services Committee to begin a \$15-million program in heavy-ion fusion because the immediate justification for such a program in terms of national defense is not entirely clear. "If a heavy-ion system is considered a potential candidate for energy production, the program should be supported by a committee other than Armed Services," says chairman Price. Members of the House Science and Technology Committee have expressed considerably more enthusiasm for heavy-ion research, and they may try to fund some of that work through their committee.

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## Grants available for data-base compilation

A new interagency grant program intended to foster the collection and evaluation of useful scientific data is being established with \$500 000 supplied by the National Bureau of Standards, NSF, DOE and the Office of Naval Research. Administered by the NBS Office of Standard Reference Data, the program will emphasize the development of critically evaluated data bases for topics such as the thermodynamic properties of pure and mixed substances, the energy levels of molecules, atoms and nuclei, the rate constants for chemical reactions and the optical properties of solids.

Proposed projects under this program are expected to have a well-defined goal and to yield results in one or two years. It is open to researchers in any organization, academic or otherwise, nonprofit or commercial. Those interested should contact the Office of Standard Reference Data, NBS, Washington, D.C. 20234.

## NSF budget cut delays millimeter-wave telescope

President Carter has sent to Congress an amendment to his Fiscal Year 1981 budget proposal that would reduce the overall budget by \$15 billion, and this has meant some unavoidable cuts in the budgets of several agencies funding physics research. The National Science Foundation was originally slated to get \$1.1 billion, a \$155 million increase over 1980 (PHYSICS TODAY, March page 134). But, under Carter's amendment, that increase would be reduced by \$74 million.

Because basic research, especially in the physical sciences, occupies such a favored status these days, both in the Administration and in Congress, the bulk of the cuts will be made in science education, applied science and innovation programs. Only \$1 million will be taken from the \$73.5 million physics budget, and the burden will be pretty much evenly distributed over elementary-particle physics, nuclear physics, atomic, molecular and plasma physics and theoretical physics, so that no one program should feel too much of a pinch. A \$1.3-million reduction in the materials-research budget will bring the increase for the materials-research laboratory

back down to a level that may just compensate for inflation. Proposed increases for the National Magnet Laboratory and the synchrotron radiation facilities will not be affected, however.

The astronomical sciences budget will be reduced 2% to \$58.9 million. This will mean deferring the detailed design of a 25-meter diameter, millimeter-wave telescope. The remainder of the astronomical sciences budget will not be significantly affected.

Among the other reductions requested by Carter are \$17.4 million from the engineering and applied sciences budget, \$10 million from science education programs, \$14.3 million from the new facility improvement grant program (eliminating this program completely), \$5.1 million from the industry/university cooperative research program, and \$2.7 million from international programs.

The amount of new money that will be allotted to NSF to help stimulate industrial innovation (PHYSICS TODAY, January, page 116) has also been cut back considerably.

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## in brief

Nobel Prize winner Philip W. Anderson describes various aspects of basic scientific research in a film recently released by Bell Telephone Laboratories. The film, called "A Fundamental Scientist," is available on loan from Bell Telephone Company film-lending libraries and can be purchased for \$125.00 from M.G.S., 619 West 54th Street, New York, N.Y. 10019.

A new bimonthly journal, *Surface and Interface Analysis*, is now being published. A year's subscription costs \$120.00 and can be ordered by writing Heyden & Son, Inc. 247 S. 41st St., Philadelphia, Pa. 19104.