



SANDIA LASER has emitted 50 joules in about 2 picosec. Overall gain is 50 000 to 150 000. The mode-locked neodymium-doped glass laser has four amplifier rods. Table at left is 4 meters long; two tables at right are 3 meters long.

The total light-path length through the laser is about 18 meters from the 100% reflector of the oscillator to the output face of the last laser rod. The pulse length is measured by a two-photon fluorescence system.

The laser has a beam divergence (quoted by American Optical) of 1 milliradian and an output diameter of 3.8 cm.

In the fusion experiments, the Sandia group hopes to generate thermonuclear neutrons by focusing the laser on a solid LiD or Li₂DT surface. Gobeli says that with a nanosecond pulse striking a solid target, the front surface evaporates so fast that the resultant plasma, formed in front of the target, shields it from some fraction of the incident energy; so one is uncertain how much energy is actually

deposited. With picosecond pulses, however, one can be fairly certain that the energy is deposited in the target. The longer pulses are good for making lots of plasma, but at Sandia the emphasis will be placed on producing neutrons, Jones explains.

Nikolai Basov and his group at the Lebedev Institute (PHYSICS TODAY, November, page 57) have done similar experiments with solid lithium deuteride and believe they have observed thermonuclear neutrons. The group is now rebuilding its laser.

The Sandia experimenters also plan to use their laser for studying radiation damage, attempting to observe photon-photon and electron-photon scattering, producing precisely variable shock waves and studying their effects on materials.

Vela Pulsar Slows, Speeds Up, And Then Slows Down Again

If some observers were surprised to find pulsars slowing down, they must have been utterly astonished to learn that the pulsar in the Vela remnant (PSR 0833-45) apparently sped up between 24 February and 3 March, and then slowed down again. Paul Reichly and George S. Downs of the Jet Propulsion Laboratory (International Astronomical Union circular no. 2140) report that during the seven-day interval the pulsar period decreased by 134 nanosec and then resumed its former rate of increase.

So astronomers have one new puzzlement about pulsars.

IN BRIEF

The University of Bochum in West Germany has ordered a 9-MeV tandem accelerator from Radiation Dynamics, Inc., at a cost of just over \$1 million. The research program on nuclear structure will be directed by D. Kamke.

A 2-MeV Van de Graaff accelerator has been passed from Illinois Institute of Technology to De Paul University last summer. It will be used for undergraduate and graduate teaching and research projects under the general direction of Thomas Stinchcomb, chairman of the De Paul physics department. □

ESR



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down to 4°K

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