new products

The descriptions of the new products listed in this section are based on information supplied to us by the manufacturers, and in some cases by independent sources. PHYSICS TODAY can assume no responsibility for their accuracy. To facilitate inquiries about a particular product, a Reader Service Card is attached inside the back cover of the magazine.

X-ray high-voltage power supply

Spellman is offering a new 9-kW, multiplier-output, x-ray high-voltage power supply that provides a basic output of minus 25 kV and 360 mA. This model RHPX1262 uses a proprietary new series resonant technology to allow switching at a rate in excess of 20 kHz while avoiding the spiking and problems normally associated with switching and pulse-width-modulator power supplies.

The auxiliary output includes two bias supplies floating at a minus 25 kV cathode potential and a regulated 300-watt filament supply floating at the cathode voltage. This current source controls the maximum current under short-circuit, overload and arcing conditions, while voltage feedback provides voltage regulation and safe operation under all normal load conditions, from open circuit to full load. The high-frequency operation allows smaller magnetic and smoothing components to be used, significantly reducing the overall size and weight of the power supply. The power supply provides voltage regulation of 0.01% and ripple of better than 0.02%. It is packaged in a standard 19″ rack, occupying less than 35″ of rack height. The price is less than $20 000. *Spellman High Voltage Electronics, 7 Fairchild Avenue, Plainview, New York 11803*

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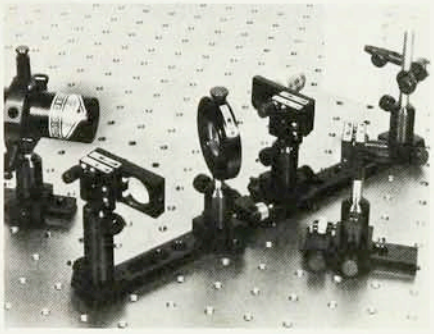
Miniature optical rail mounting system

A new, low-cost, miniature optical rail mounting system from Newport is claimed to facilitate the rapid assembly of optical systems, even in three dimensions. Incorporating a conventional dovetail rail-and-carrier approach, the "Micro-Series" system includes adjustable mirror mounts and translating carriers that provide fine positioning



adjustments along all three axes. Quick assembly is possible with components mounted on carriers that attach directly at any point on the rails and are firmly secured in position with a thumbscrew lock. Rails are available in lengths from 1.5 to 24 inches, with hole patterns that permit mounting to Newport tables at any angle.

The Micro-Series mounting system accomodates optics up to $\frac{3}{4}$″ diameter; it is compatible with Newport's Mini-Series mounts. Combining Micro-Series and Mini-Series components, we are told, one has great flexibility in meeting the requirements of optical setups. Component prices range from $7 to $48. *Newport Corporation, 18235 Mt. Baldy Circle, Fountain Valley, California 92708*

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High-performance cryopumps and cryorefrigerators

Varian has introduced the new Cryostack line of high-performance cryopumps and cryorefrigerators. The integrated-component design of the Cryostack line is claimed to provide "optimized performance, reliability, and serviceability" for applications in semiconductor and device processing as well as research and development. Coupled with Varian's high-refrigeration-power cryoexpander, these cryoarrays are claimed to have the highest available rating for impulsive and

new products

steady-state load capacities. With crossover achievable at higher pressures, roughing and cycle times are minimized. Users can also operate the pumps at higher pressures during processing.

Four of the six Cryostack models offer integrated component stacks. Because of their compact, high-conductance design, the integrated stacks have up to twice the pumping speed of separately assembled components, we are told. Increased pumping capacity raises system throughput, minimizing cycle time and speeding pumpdown to base pressure. In all Cryostack pumps, the multilayered second-stage cryoarray doubles the pumping capacity for hydrogen. Consequently, it doubles the time between regeneration cycles and allows the pump to stay on-line longer. A purge-tube design provides fast warm-up, and first-stage vents accelerate roughing, further shortening regeneration cycles. The cryo-expander's refrigeration power is said to ensure fast cooldown. *Varian Associates, 611 Hansen Way, Palo Alto, California 94303*

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Low-priced, 64-bit array processor

CSPI has introduced its new model MAP-6410, a 64-bit array processor priced at $50 000. The MAP-6410 will, we are told, provide double-precision computation at mainframe speeds, but at a much more modest price. Attached to a micro, mini or super-mini computer, the MAP-6410 performs iterative mathematical functions with the accuracy of mainframes selling in the multimillion dollar range with a 10- to 200-fold enhancement of the speed of the host computer. All arithmetic operations are true floating point, in a 64-bit hexadecimal format that provides 16 decimal digits of precision.

There are three levels in the MAP-6410 software heirarchy: The top level is the Matrix Accelerator Package, a set of single statement calls for various linear-algebra operations that automatically perform buffer set-up, memory transfers, processing initiation and routing of results. Any FORTRAN programmer, we are told, can use the MAP with no special knowledge of array processors. At the intermediate level is the SNAP-II library and operating system. The library contains over 300 FORTRAN-callable functions to give the programmer more flexibility and efficiency in defining MAP programs for signal, image, vector, and matrix processing. Finally, Assembly Language Development Utilities allow a user to add virtually any algorithm to the SNAP-II library.

Functionally, the MAP-6410 is made up of two parallel buses, containing program and data memory as well as serving independent processors for control, arithmetic, and input and output. This multibus architecture permits

- single and double precision computation
- combinations of matrix, vector, and scalar arithmetic
- simplified control functions for do loops and conditionals
- performing arithmetic at peak throughput concurrent with I/O up to 16 MB/sec

CSPI, 40 Linnel Circle, Billerica, Massachusetts 01821

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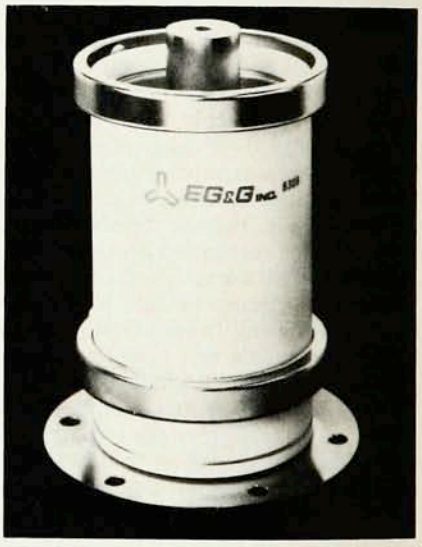
Thyrotrons for pulsing gas lasers

The new 3400 series of ceramic–metal thyratrons from EG&G Electro-Optics is designed for pulsing gas lasers. The tubes have three-inch diameters. Available as triodes and tetrodes with auxiliary grids for precise triggering, these tubes are claimed to offer long



life. They can be cooled by convection or water. Recovery time is fast, with 6–10 kHz repetition rates, and 10–20 ns switching times. Ratings are up to 35 kV and 2.5 kA for 5 microseconds, or 6 kA for 500 nanoseconds. *EG&G Electro-Optics, 35 Congress Street, Salem, Massachusetts 01970*

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Helium liquifier needs no liquid nitrogen

Koch has introduced an increased-capacity helium liquefier–refrigerator. Seeking to provide a system that can produce liquid helium without neces-

sarily using liquid nitrogen for precooling, Koch has developed a helium liquefier patterned after its earlier model KPS 1400. By modifying the primary heat exchanger, they were able to utilize greater compressor capacity with the same reciprocating expansion engines used in the earlier model. The result, we are told, is the achievement of a liquefaction capacity in excess of 20 liters per hour without liquid-nitrogen precooling and an even greater capacity with liquid-nitrogen precooling.

This medium-capacity liquefier has been renamed model 1460. It has a liquefaction capacity of 35 liters per hour using liquid-nitrogen precooling and one rotary-screw compressor. It can also produce 20 liters of liquid helium per hour with the same compressor capacity but without liquid nitrogen precooling. In addition, the model 1460 can accomodate two compressors to produce up to 70 liters per hour with liquid-nitrogen precooling. *Koch Process Systems, 20 Walkup Drive, Westborough, Massachusetts 01581*

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Swivel viewport enlarges field of view

Shrader Scientific's newest high-vacuum viewport, the Swivel Viewport, model SWVP-2, utilizes a movable viewing tube to give the user a large viewing area. The stainless-steel tube will swivel 20 degrees in any direction from the axial centerline. The swivel tube has a knurled thumbscrew brake that lets one lock the unit in any desired position.

Another feature of the tube is a purge fitting at the window end. This fitting can be connected to a gas bleed to prevent the glass from becoming coated in deposition applications. The swivel viewport is also equipped with an adjustable polarizing lens to permit direct viewing of high-intensity heating processes. The assembly mounts on a three-inch ASA flange. Other flange configurations are also available. *Shrader Scientific, 23588 Connecticut Street, Hayward, California 94545*

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Constant-voltage/constant-current hv power supplies

Gamma High Voltage Research has introduced the new RR series of constant-voltage/constant-current high-voltage power supplies with line and load regulation of 50 ppm. Applications include ion implantation, x-ray systems, CO_2 lasers, capacitor chargers, mass spectrometers and ionization chambers. The RR series incorporates off-line, switch-mode, pulse-width modulator techniques for power generation and control. A chopper frequency of greater than 25 kHz allows output capacitance to be minimized, insuring low stored energy. Full protection agains any overload condition is inherent in the constant-voltage/constant-current design, making these units virtually impervious to arc-overs and short circuits, we are told. All high voltage components are encapsulated in a silicon elastomer for corona-free operation.

Standard feature include remote voltage-programming capabilities, remote output voltage and current monitoring, and external interlock. Models are available with voltage levels from 2 to 100 kV, at power levels of 60, 150 and 300 watts. Higher ratings are available upon request. *Gamma High Voltage Research, 152 South MacQuesten Parkway, Mt. Vernon, New York 10550*

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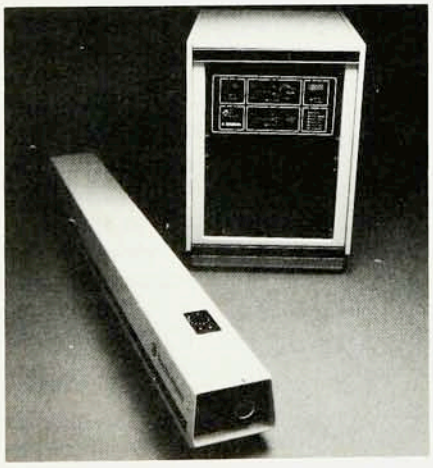
Picosecond mode-locked Nd:YAG laser

A new series of cw mode-locked and mode-locked, Q-switched Nd:YAG lasers has been introduced by Spectra-Physics. These Series-3000 lasers are claimed to extend research opportunities in time-resolved spectroscopy by providing extremely short pump laser pulses of less than 60 picoseconds. Tunable dye-laser pulses at microjoule levels are generated at repetition rates of one to ten kHz.



The Nd:YAG lasers complement the Spectra-Physics line of ion-based, synchronously pumped dye lasers, providing new capabilities and interchangeability of system components. They are designed, we are told, "for high reliability with low routine maintenance costs." *Spectra-Physics, 1250 West Middlefield Road, Mountain View, California 94042* □

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