

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.

Computer Program for Visualizing Relativistic Kinematics

Physics Academic Software, an educational project of the American Institute of Physics, has published its first computer program, SPACETIME. The program is designed to run on the IBM PC, XT, AT and PS/2 personal computers.

SPACETIME was created to help physics students develop an intuition for the bizarre effects that occur at relativistic velocities. Calculating the special-relativistic kinematic effects can be tedious, and the results are difficult to visualize. SPACETIME allows students to place clocks, rods, light flashes, beacons and even a spaceship on a superhighway with different speed lanes. Users can move time forward and backward and mark events in space-time. They can jump to any object, to see how things appear from that vantage point. The program lets one draw world lines, light cones and invariant hyperbolas.

SPACETIME was created by Edwin Taylor at MIT, with the help of several undergraduates. Funding was provided by MIT's Project Athena. The program has been used and tested at a number of universities. The Physics Academic Software edition features improvements and documentation. Instructors will find SPACETIME easy to incorporate into their curricula, we are told, and students will find it accessible—even for independent study.

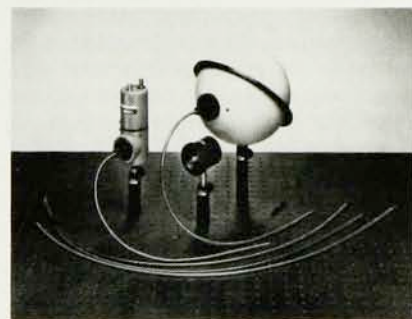
The complete SPACETIME package—including one diskette (either 5 1/4" or 3 1/2"), a 67-page user manual and a 37-page instruction manual—is licensed for use on a single machine for \$30 (plus shipping and handling). A ten-copy site license is offered for an additional \$60. *Physics Academic Software, American Institute of Physics, 335 East 45th Street, New York, New York 10017*

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Fiberoptic Bundles for Ultraviolet Transmission

Oriel is offering a new line of high-grade fiberoptic bundles designed for ultraviolet transmission. These fused-silica bundles have good transmittance in the wavelength range from 210 to 2200 nm, and they can handle 5 watts of broadband power. They are particularly useful for carrying ultraviolet light to or away from monochromators, detectors or hard-to-reach samples.

Oriel's new high-grade bundles come in lengths from 2 to 6 feet, with 1/8" and 1/16" core diameters. A bifur-



cated model is also available. The bundles are randomized to produce a uniform output beam. Oriel carries a full line of adapters to hold these bundles at the output of their light sources, monochromator entrance and exit slits, or detectors. Stand-alone holders permit rod mounting and adjustment of the bundle face position.

Oriel also offers more economical standard-grade bundles that transmit from 280 to 2200 nm, glass bundles for the 400–1500-nm wavelength range, and a large selection of single fibers for the broad range from 200 nm to 5 μ m. For full information, request Oriel's new Volume II catalog. *Oriel Corporation, 250 Long Beach Boulevard, Stratford, Connecticut 06497*

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The same Speakeasy is available for IBM computers with TSO and CMS, for DEC VAX's under VMS and Micro VMS, and for Micro computers using MS-DOS and PC-DOS. You can even transfer results from one type of computer to another to exploit specific machine capabilities.

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INFRARED INSTRUMENTATION

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- Composite Si Bolometers
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- Ge:Ga Photoconductors
& Arrays
 $30\mu\text{m} < \lambda < 120\mu\text{m}$
- Si:Ga Photoconductors
& Arrays
 $5\mu\text{m} < \lambda < 18\mu\text{m}$
- InSb Photovoltaic
 $1\mu\text{m} < \lambda < 5\mu\text{m}$
- InSb Hot Electron Bolometer
 $200\mu\text{m} < \lambda < 5000\mu\text{m}$
- Si:B Photoconductor
 $5\mu\text{m} < \lambda < 33\mu\text{m}$
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Multichannel-Analyzer Card for Nuclear Scintillation Detectors

The Canberra Nuclear Products Group is introducing what it describes as "the first PC-based multichannel-analyzer board with all the necessary pulse-height-analysis electronics." Canberra calls it the Accuspec NaI Plus because it is intended for use with sodium iodide and other scintillation detector materials. It obviates the need for bulky NIM bins or bench-top front ends, we are told.

The Accuspec board includes a high-voltage power supply, an amplifier, a 100-MHz Wilkinson ADC and a multichannel-analyzer interface. The board only requires a single, full-size PC or XT slot; then it's ready to cable to a photomultiplier-tube base assembly. Coupled with an NaI or other scintillation detector, the system is ready for pulse-height acquisition.

Setting up the system is facilitated by the multichannel-analyzer control software. Parameters such as voltage, amplifier gain and ADC conversion gain are set through the PC keyboard. Once the system is set up, start-up files automatically do the calibration.

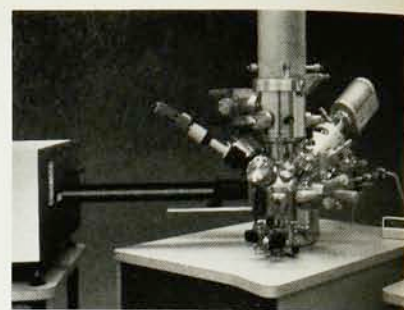
The control software also supports concurrent operation of other Accuspec boards in the same computer. It provides an operator interface and programmability for automated applications, and it supports up to 16 interfaces per system. *Canberra Industries, One State Street, Meriden, Connecticut 06450*

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Surface Analysis by Laser Ionization

Perkin-Elmer's Physical Electronics Division is introducing what it describes as "a powerful new surface-analysis technique" using laser ionization followed by time-of-flight analysis. Perkin-Elmer calls this the new technique by the trademarked acronym SALI.

This patented technology uses a high-intensity laser to ionize sputtered neutrals. This is said to provide improved quantitative analysis, better mass resolution, expanded mass range and increased surface sensitivity. In SALI, a probe laser, ion or electron beam is directed at the sample surface to remove a small amount of material. An untuned, high-intensity laser beam is



then directed to a spatial region adjacent to the sample surface. The laser beam coming in contact with the sputtered material has sufficient intensity to induce a high degree of nonresonant, and hence nonselective, photoionization. The nonselectively ionized sample is then subjected to mass spectral analysis.

SALI is well suited to chemical analysis of synthetic polymers and other organic materials, analysis of semiconductor and metallurgical samples, and surface analysis of biomedical devices. The system uses a reflectron time-of-flight analyzer and an Apollo 32-bit workstation. *Perkin-Elmer, Physical Electronics Division, 6509 Flying Cloud Drive, Eden Prairie, Minnesota 55344*

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Measuring Gradient Refractive-Index Profiles

The new Automach line of automatic phase-measuring interferometers from Gradient Lens measures index of refraction, thickness changes or optical phase in transparent samples. Typical applications include gradient refractive-index profiles and the measurement of inhomogeneities in plastic and glass blanks, windows, laser rods or liquid samples.

The Automach devices employ a Mach-Zender interferometer to measure refractive-index variations across a transparent sample. The phase-change image produced by the recombined sample beam and reference beam is then scanned. Scanning has a number of advantages: The number and density of fringes is limited only by the magnification and resolution of the imaging lens, so that one can measure large index changes occurring over short distances. Also, lateral chromatic aberrations do not affect the magnification during multiwavelength sample measurements.

Standard models (Z25 and Z50) are available for samples up to 50 mm in

diameter and 100 mm in thickness. These models operate over the entire visible spectrum. Custom models can be ordered for larger sample sizes and for infrared measurements. *Gradient Lens Corporation, 207 Tremont Street, Rochester, New York 14608*
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One-Torr Barocel Vacuum Transducer

Edwards High Vacuum has introduced a new 1-torr vacuum transducer, the Model 655A. This transducer incorporates new design features that are claimed to enhance reliability and performance. The sensor portion, which is exposed to the measured gas, employs a new cavity geometry and weld design that resists particulate deposits. The sensor is heated and thermally stabilized to enhance thermal and long-term stability. The Model 655A is well suited for vacuum systems, where leak tightness and cleanliness are critical. There is no loss of accuracy due to corrosion, ionized gases or change of gas composition, we are told.

The Model 655A is a stand-alone transducer, requiring only ± 15 V dc for a maximum current of 250 mA from a conventional power supply. The 0-10-V output signal has better than 0.15% reading accuracy and 0.01% full-scale resolution. It indicates true total pressure, independent of gas composition, in various ranges up to 1000 torr. The output may be displayed on analog or digital voltmeters, or sent directly to computer-based controllers or data-acquisition systems. Standard pressure fittings include a $\frac{1}{2}$ " straight tube and NW16. Conflat and Cajon VCR fittings are optional. *Edwards High Vacuum International, One Edward Park, 301 Ballardvale Street, Wilmington, Massachusetts 01887*

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Massively Parallel Computers at Moderate Prices

Maspar, a new manufacturer of massively parallel computers, is introducing its MP-1 family of computer systems. The prices of these systems, we are told, are comparable to those of typical midrange minicomputers. The MP-1 family of data-parallel computers follows a single-instruction-

multiple-data architecture with as many as 16 384 individual processors. Massively parallel systems with more than a thousand processors working simultaneously are particularly useful for intensive applications that simply take too long on a more conventional machine.

The new Maspar computers deliver up to 30 000 MIPS (millions of instructions per second) and 1250 megafLOPS. The MP-1 family includes the MP 1100 series and MP 1200 series, with a total of eight models. Prices begin at \$160 000 for a 1024-processor system (MP 1101); the 16 384-processor model (MP 1216) sells for \$800 000. *Maspar Computer Corporation, 749 North Mary Avenue, Sunnyvale, California 94086*

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Microwave Testing of High-Temperature Superconducting Films

Superconductor Technologies is offering a new testing service for characterizing thin-film, high-temperature superconductors at microwave frequencies. Some of the first practical applications of the new superconductors may be in the improvement of existing microwave systems. The new testing service is intended as a step toward bringing the new superconductors into practical microwave applications.

The specific tests being offered characterize thin films from dc up through millimeter-wave frequencies. They include resistivity vs temperature, surface resistance at 10 GHz and surface resistance at 100 GHz. Because loss in superconductors increases rapidly with frequency, microwave characterization is a particularly demanding test of film quality. Thin films that are good at microwave frequencies are even better at lower frequencies.

Superconductor Technologies stresses the potential of the new superconductor materials for microwave and millimeter-wave applications. The firm has concentrated on developing thallium-based superconductors, which are said to give the best microwave properties at the highest practical operating temperatures. A technical bulletin describing the theory and measurement of microwave surface resistance is available on request. *Superconductor Technologies, 460-F Ward Drive, Santa Barbara, California 93111*

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