

NEW PRODUCTS

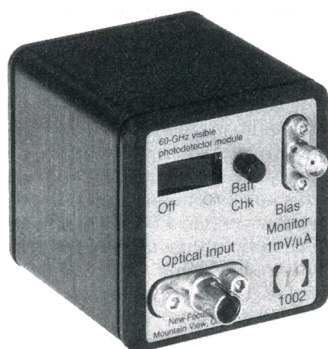
The descriptions of the new products listed in this section are based on information supplied to us by the manufacturers, and in some cases by independent sources. PHYSICS TODAY can assume no responsibility for their accuracy. To facilitate inquiries about a particular product, a Reader Service Card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

Ultrafast Photodetectors for Visible and Infrared

New Focus has introduced its new 1000 line of ultrafast photodetectors with bandwidths up to 60 GHz, corresponding to a risetime of 6 picoseconds. These photodetectors are said to offer twice the speed of previously available commercial devices. In addition to uses in laser research and optical communications, these detectors are suited for pump-probe spectroscopic experiments.

The detectors connect directly to a spectrum analyzer or a sampling scope, where the optical signal is picked up with an optical fiber. They are self-contained, requiring no external power supplies or expensive bias networks.

The basic device consists of a Schottky diode with a low-loss transmission line located on the same chip. For use at visible wavelengths the



firm offers two GaAs models. For the near infrared, up to 1600 nm, the photodetecting material is InGaAs. Several rf and fiberoptic connector versions are offered to provide appropriate inputs to different instruments. Prices begin at \$4900. *New Focus, 340 Pioneer Way, Mountain View, California, 94041*

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Integrated PC-Based Data Acquisition Products

Keithley Asyst has released a series of data-acquisition systems that include both hardware and software. These new systems range from the entry-level Easyest System 8, designed for basic applications such as data logging and product testing, to the high-end Viewdac System 575, designed for complex applications on a 32-bit 386- or 486-based PC. Each system includes start-up sequences that can test for proper system configuration. One can use a software spectrum analyzer, an oscilloscope or a signal monitor. *Keithley Asyst, 100 Corporate Woods, Rochester, New York 14623*

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Computer Simulation of the Solar System

ARC has brought out a new upgrade (version 2.3) to Dance of the Planets, an elaborate and sophisticated computer simulation of the Solar System. It combines realistic images with accurate, animated orbital simulations.

Dance of the Planets is a general model of the dynamic astronomical sky, with some 9100 stars and 1300 deep-sky objects. Simulations include a visually detailed waxing and waning Moon, and rotating planets with accurate surface features and lighting effects. Comet tails respond to the solar wind, and solar transits by Mercury and Venus can be seen. Features to help orient the user include optional constellations and celestial grid lines, and a "find" option to locate specified objects. Operation is primarily by menu with mouse support. Printer support has been expanded and includes the ability to annotate screen dumps with labels and notes.

Solar eclipses, of special interest

OPTICAL RAY TRACERS

for IBM PC, XT, AT,
& PS/2 computers

BEAM TWO \$89

- for students & educators
- traces coaxial systems
- lenses, mirrors, irises
- exact 3-D monochromatic trace
- 2-D on-screen layouts
- diagnostic ray plots
- least squares optimizer
- Monte Carlo ray generator

BEAM THREE \$289

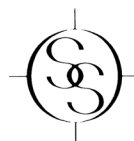
- for advanced applications
- BEAM TWO functions, plus:
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- tilts and decenters
- cylinders and torics
- polynomial surfaces
- 3-D layout views
- glass tables

BEAM FOUR \$889

- for professional applications
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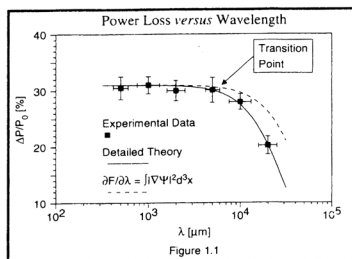


STELLAR SOFTWARE

P.O. BOX 10183
BERKELEY, CA 94709
PHONE (415) 845-8405
FAX (415) 845-2139

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RPlot Version 2.00 !



RPlot is fast becoming recognized as an indispensable research tool for scientists and engineers. Designed as an MS-DOS utility, RPlot allows quick and easy plotting of data. Graphs are obtained by simply typing "plot" followed by one or more data file names. Numerous options can be added to produce professional, publication-quality graphs.

Version 2.00 introduces several new features including curve fitting, a menu-driven *Graph Augmenter*, PostScript printer support, and more. RPlot is only \$149.00, and is discounted to \$99.00 for educational institutions. RPlot comes with a 30-day money-back guarantee. For free brochure, contact:

RSoft, Inc. • 345 Riverside Drive
Suite 2G • New York, NY 10025
(212) 666-0959 • FAX: (212) 666-3962

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The Energy Sourcebook A Guide to Technology, Resources and Policy

Edited by **Ruth H. Howes**, *Ball State University* and **Anthony Fainberg**, *Office of Technology Assessment, Washington, D.C.*
Prepared by the Energy Study Group of the American Physical Society's Forum on Physics and Society

Spring 1991. 546 pages. Illustrations, bibliographies, glossary, index.
Hardcover. ISBN 0-88318-705-1.
\$75.00 list price. \$60.00 member price.*
Paperback. ISBN 0-88318-706-X
\$35.00 list price. \$28.00 member price.*

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Prices are subject to change without notice.

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this year, show additional detail in the new version, including the solar corona and stars appearing during totality. Local horizons can now be seen, and the viewing of ancient skies has been enhanced by taking into account the Earth's slowing rotation and extending the time period back to 4681 BC. One can now, for example, witness the total eclipse of 15 April 135 BC much as it was seen by the Babylonians. The price is \$195. *ARC Software, P. O. Box 1955, Loveland, Colorado 80539*

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Classroom Video Demonstrations of Lasers and Optics

Shaoul Ezekiel of MIT has videotaped 48 demonstrations that illustrate for undergraduates most of the fundamental phenomena relating to lasers and physical optics. The demonstrations are conveniently grouped in ten videocassettes and sold by the MIT Center for Advanced Engineering Study.

By using split-screen inserts and a wide range of video-recording capabilities, the cassettes show real-time effects in lasers and optics with the simultaneous manipulation of the components that cause these effects. In this way, students can see effects close up that would be difficult, if not impossible, to display in front of a classroom.

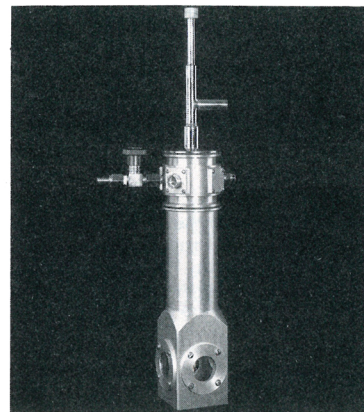
The experimental setups are simple to follow, and ample references are given for background reading. Several puzzles are left for the viewer to solve. *MIT Center for Advanced Engineering Study, Room 9-234, 77 Massachusetts Avenue, Cambridge, Massachusetts 02139-4391*

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Continuous-Flow Cryostat Down to 1.4 K

Janis Research is now supplying its ST series Supertran continuous-flow cryostat with a redesigned delivery and heat-exchange mechanism. This new mechanism allows efficient operation of the cryostat down to 2.3 K in the horizontal and inverted positions. The new design also provides temperatures down to 1.4 K in the upright, vertical position. The cooling power exceeds 2.9 Watts at liquid-helium temperature in all postures.

With an operational temperature range from 1.4 to 500 K, this cryostat



is suited to a variety of applications, including superconductivity, spectroscopy and device characterization. In its ultra-high-vacuum version, the cryostat can be coupled to xyz manipulators for introduction into deposition chambers. It can be used with infrared microscopes and spectrophotometers, or in any clean environment. It is supplied fully integrated with thermometry and automatic temperature controllers. The cryostat can be used with either liquid helium or liquid nitrogen. *Janis Research, 2 Jewel Drive, P. O. Box 696, Wilmington, Massachusetts 01887-0696*

Circle number 144 on Reader Service Card

Electromagnetic-Field Design Software

Infolytica offers the new version 4.0 of its MagNet software as a major revision, available on all currently supported hardware platforms, which include 386/486, HP, Sun, Apollo DEC, IBM and Cray. MagNet software is used to analyze magnetic- and electric-field problems in the design and analysis of motors, transformers, recording heads, loudspeakers, nmr systems and other such applications.

The new version 4.0 can solve three-dimensional voltage-driven problems, including problems with multiply connected regions and problems (ac motors for example) where the equivalent current is difficult to derive. The new version also offers a fast-usage mode that allows quick solution evaluation with fewer input steps.

The new version's increased number of primitives and regions lets the user define more complex geometries. Greater user control over graphic output is provided by selective displays of field plots, which let the user highlight regions of interest. Shaded models with controllable light source and cutoff angle can be displayed or

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printed, as well as outline displays and fast 3D displays. In three-dimensional time-harmonic problems, the flux density can be displayed in several forms: the in-phase (real) component, the quadrature (imaginary) component, the time-averaged magnitude and the phase. Descriptive literature and a demonstration disk are available. *Infolytica, 1140 de Maisonneuve, Suite 1160, Montreal, Quebec, Canada, H3A 1M8 Canada*
Circle number 145 on Reader Service Card

Auger Nanoprobe for Surface Analysis

Perkin-Elmer's Physical Electronics Division has introduced the PHI 670 scanning Auger nanoprobe system for surface analysis. The 670 offers fast analysis of microscopic surface features with high spatial resolution. Using a Schottky field-emission electron source, a cylindrical mirror analyzer, a new PHI multichannel detector and advanced software, the 670 yields high-magnification SEM images, sensitive elemental analysis and fast throughput. With the 670 one can do Auger microscopy at magnifications of 100 000 $\times$ in minutes. Applications include particle analysis and characterization of materials such as silicon, ceramics and metallic alloys.

The PHI 670 nanoprobe system includes automated control, a magnetic sample-introduction system and an enhanced ultrahigh-vacuum environment that permits ion-beam Auger depth profiling. *Perkin-Elmer, Physical Electronics Division, 6509 Flying Cloud Drive, Eden Prairie, Minnesota 55344*
Circle number 146 on Reader Service Card

Software for Static Electric and Magnetic Fields

Accelerator Consultants Incorporated is about to release version 2 of Poisson-386, its software package for electric- and magnetic-field solutions. Poisson-386 is a package for solving static-field problems in two dimensions on IBM-PC-compatible personal computers. Applications include magnet design, high-voltage equipment, rf cavities and pedagogy.

The programs handle multiple dielectrics and nonlinear ferromagnetic materials. Poisson-386 accepts boundary conditions and generates conformal triangular meshes to fit them. The programs have built-in

extended memory support for 386 machines. The package can utilize up to 30 000 mesh points. The run time for most problems is less than 10 minutes. The package includes a graphics post-processor with mouse support to explore solutions and extract field information.

Poisson-386 will be sold (not leased) for \$1699. A free software catalog and demonstration disk are available upon request. *Accelerator Consultants Incorporated, 53 Rock Point Place NE, Albuquerque, New Mexico 87122*

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Hazardous Gas Eliminator

Plasma Products has introduced a gas-reactor column that reduces the concentration of hazardous gases by converting them to inert solids. The system uses a two-stage heated cartridge containing chemicals that react with halides, hydrides and CFCs. The first stage reduces the gases to more reactive forms, which then combine with the second-stage chemicals to form a low-vapor-pressure inorganic compound that meets EPA standards for sanitary landfill burial. The system also eliminates particle-discharge condensables from pump exhausts. Cartridges last for several months, and they are easy to replace. *Plasma Products, P. O. Box 11246, Hauppauge, New York 11788*

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New Literature

Basics of Cryopumping is a 28-page pedagogic booklet from APD Cryogenics Inc, a subsidiary of Intermagnetics General. The booklet offers technical instruction on the fundamentals of cryopumping for new and potential cryopump users. *APD Cryogenics, 1833 Vulture Street, Allentown, Pennsylvania 18103*

Vacuum technology is the subject of this 93-page, pocket-sized compendium offered free of charge by Leybold. The *Vacuum Vademecum* discusses concepts and notation and presents tables, diagrams and formulas. It covers kinetic theory of gases, gas flow, selection of vacuum pumps, low-pressure measurement and leak detection and applications. For a free copy, write (on your institutional letterhead) to *Leybold Vacuum Products, Marketing Services Department, 5700 Mellon Road, Export, Pennsylvania 15632-8900* ■

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