

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.

Detecting and Identifying Transuranic Alpha Emitters

The Quantrad Sensor Division of Applied Electron Corporation offers a new product for the detection and spectroscopic identification of radioactive particles in liquids. The Liquid Analyzer System 100 is based on a proprietary silicon detector technology. Its cup/sensor design allows alpha-emitting radionuclides to attach themselves to the face of the detector, thus yielding spectroscopic identification of the radioactive isotope. Plutonium, uranium, americium and radon are among the alpha-emitting isotopes that are of concern to environmentalists and industry. Applications include nuclear waste cleanup, water monitoring and bioanalysis of exposed workers.

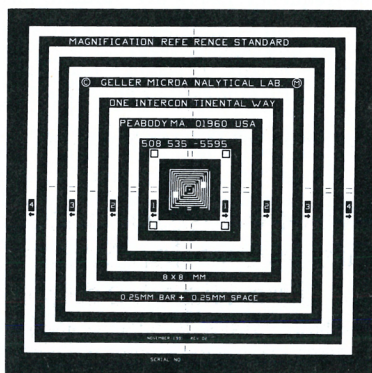
The System 100 includes an advanced multichannel-analyzer workstation operating under a Microsoft Windows 3.0 interface for data acquisition and analysis. *Quantrad Sensor Division, Applied Electron, 2360 Owen Street, Santa Clara, California 95054*

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Magnification Reference Standard for Microscopy

Geller Microanalytical Laboratory is offering a new magnification reference standard for microscopy, the Model MRS-2. The MRS-2 allows one to calibrate in both the x and the y directions. Designed for both optical and scanning electron microscopy, the NIST traceable standard contains an assembly of square boxes (with line widths of 250, 25 and $1\mu\text{m}$), allowing magnification calibration from $10\times$ to $500\,000\times$.

The standard can be imaged in reflected and transmitted light, and



in secondary and backscattered electron modes at virtually any accelerating voltage without becoming electrically charged. Linearity, orthogonality, pincushioning, barreling and CRT resolution can also be determined. *Geller Microanalytical Laboratory, One Intercontinental Way, Peabody, Massachusetts 01960*

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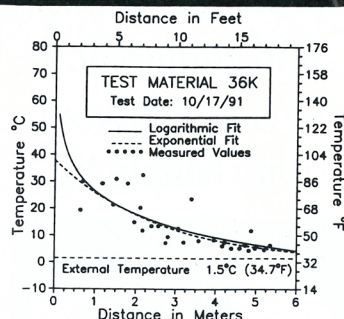
Single- and Double-Frequency Stabilized Lasers

Aerotech's new single- and double-frequency stabilized lasers utilize a proprietary stabilization technique to improve frequency and amplitude stability. The novel Aerotech stabilization method utilizes rf induction to control thermally the length of a specially designed mirror mount structure.

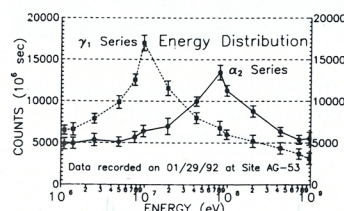
This technique is claimed to provide two advantages over the more common conduction method: more rapid servo response, and therefore better frequency stability, and a more compact package, because only the mirror mount is controlled.

With this stabilization technique, Aerotech's single-frequency laser is claimed to achieve better than 1-MHz stability. An accessible potentiometer on the stabilization adapter lets

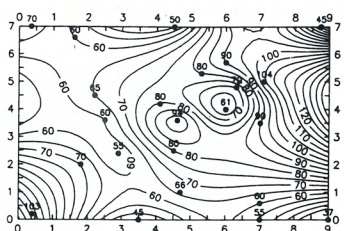
SCIENTIFIC GRAPHICS



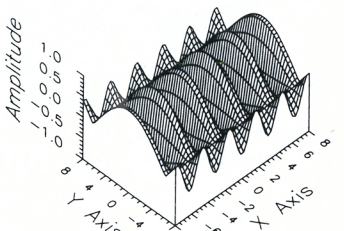
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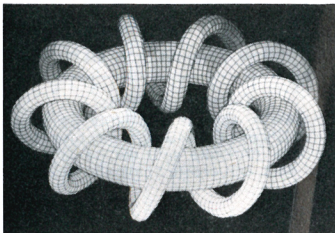
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the user adjust the frequency between 100 and 600 MHz from the blue side of the Doppler gain profile.

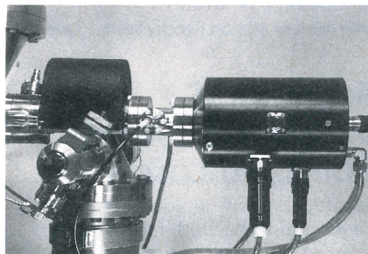
Amplitude stability for both the 1.0-mW and 0.5-mW single-frequency models is 0.1 percent, while amplitude noise is less than 0.1 percent rms. Output power or amplitude is typically adjustable between 0.5 and 1.2 mW for the 1.0-mW models. The 0.5-mW models have a typical output-power adjustment range of 0.35 to 0.70 mW.

Both the 100SF series of single-frequency lasers and the 170DS double-frequency lasers are suitable for interferometry, holography, velocimetry and spectroscopy. *Aerotech, Electro-Optical Division, 101 Zeta Drive, Pittsburgh, Pennsylvania 15238*

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Cyclotron Resonance Microwave Ion Source for Ultra-High Vacuum

Kimball Physics is offering a new electron-cyclotron-resonance microwave ion source. The Model IMG-31 is designed to inject a wide variety of positive ion species into an ultrahigh-vacuum chamber by double differential pumping. The source can generate many reactive ions. Beam energy (50 eV to 5 Kev standard, 20 KeV optional), beam diameter and beam current are independently adjustable



over wide ranges. Kimball stresses the instrument's compactness, ease of mounting (70 or 114 mm conflat), quick startup, stable beams and the absence of a cathode. The source is intended as a research tool for molecular-beam epitaxy, surface physics and the study of atomic and molecular collisions.

The fully bakeable source includes a plasma chamber, extraction optics an einzel lens, accelerating lenses and x/y deflectors. Beam sizes range from 0.5 mm to several centimeters, with current densities up to 5 mA/cm². The compact, shielded plasma chamber has a viewing window for

monitoring and spectroscopy. The power supply package includes a microwave generator with dc block and a cyclotron-resonance magnet supply.

Options include an $E \times B$ mass filter, a column bend for neutral removal, custom lenses, extended energy ranges, custom transfer optics, a beam-line isolation valve, a Faraday cup and beam pulsing and scanning systems. *Kimball Physics, Kimball Hill Road, Wilton, New Hampshire 03086-9742*

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Imaging Spectrographs for CCD Detection Systems

Acton Research has introduced its SpectraPro i-Series of imaging spectrographs, designed for use with the latest ccd detection systems. These spectrographs are suitable for multi-stripe fiber optic spectroscopy, simultaneous monitoring of different light sources and light-source cross-sectional spectroscopy.

With a flat two-dimensional focal plane, SpectraPro i-Series spectrographs offer good vertical imaging characteristics, we are told, and high spectral resolution. They also have triple-indexable gratings, full wavelength scanning and a wide selection of available gratings and accessories. These spectrographs can be controlled by remote push-button or computer commands (RE-232 standard, IEEE-48 optional) to allow remote grating change and scan control.

SpectraPro ccd imaging spectrographs come in two versions: the compact SpectraPro-275i (275-mm focal length) and the high-resolution SpectraPro-500i (500-mm focal length). Accessories include imaging fiber-optic bundles, data-acquisition software, light sources, filter assemblies and a large selection of gratings. Applications include monitoring and testing of plasmas, lasers and a variety of light-emitting devices. *Acton Research Corporation, PO Box 2215, Acton, Massachusetts 01720*

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Time-of-Flight Mass Spectrometry Data Acquisition System

LeCroy has introduced a new time-of-flight data acquisition and processing system for its 7200 series precision digital oscilloscope. The new system allows the user to gather data in both

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analog and pulse counting modes with a digital storage oscilloscope.

The new data-acquisition package includes calibration of the horizontal axis in mass units and extensive postprocessing of time-of-flight data. It benefits from the 7200's long record length (up to 1 million points) and excellent resolution. The 7242B-L1 plug-in, for example, can resolve 500 picoseconds and still have a maximum flight time of 500 microseconds.

The 7200 mainframe is claimed to provide a novel combination of modularity signal analysis, mass storage, automation and ease of use. In the pulse counting mode, the 7200 acts like a multihit time-interval analyzer with up to 50 picoseconds resolution. In addition, the 7200 emulates a discriminator front end by rejecting pulses lower than a selectable threshold. In the analog mode, the 7200 can do synchronous averaging with automatic background subtraction.

The 7200 offers processing on an internal hard disk and storage on an MS-DOS-compatible floppy disk. The price of the Model 720 precision digital oscilloscope is \$17 000. The Model 7242B-L1, two-channel, 1-GS/s plug-in with a megaword of memory is \$22 900. *LeCroy, 700 Chestnut Ridge Road, Chestnut Ridge, New York 10977-6499*

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Single-Piece Air Bearing X-Y Table

New England Affiliated Technologies is offering its new air bearing x-y table. Its unusual single-piece design, we are told, avoids errors of the more conventional stacked x-y tables, in which the upper axis is mounted to, and adds to the errors of, the lower axis. Most of these designs also experience varying torque moments as stage components cantilever out beyond their support points.

The NEAT air bearing x-y table is claimed to eliminate these effects by translating a single payload carrier in both the x and y directions. This moving element is continuously supported by a 5-micron air film over a precision lapped-granite base plate. The resulting design, we are told, achieves flatness tolerances of less than 3 microns over the full 150×150 mm x-y travel, with pitch and roll values held below 4 arcseconds.

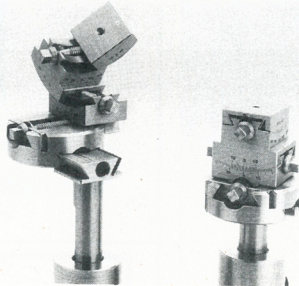
Position feedback is provided by a choice of linear encoders, grating encoders or laser interferometers, spanning a range of resolutions from 01 to 1.0 microns. Actuation options range from stepping-motor driven

leadscrews to noncontact, sinusoidally driven linear brushless servomotors. *New England Affiliated Technologies, 620 Essex Street, Lawrence, Massachusetts 01841*

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Micropositioner for Linear and Arc Positioning

The Charles Supper Company has introduced a new compact micropositioner, which the firm describes as "stable, solid and permanently lubricated to facilitate the final setup of a wide range of lasers, optics and other precision equipment." The Supper "Ultrapositioner" combines x-y and arc travel in one unit that measures 42×20.6×22 mm. Adjustable and lockable by means of a removable



Allen-type key, the ultrapositioner offers 3mm of x-y travel and 50° of arc travel, read on a vernier scale.

The drive screw is permanently lubricated for stability. The instrument is made of nickel silver. It has a 5-mm base mounting stud, and it can be used in any orientation. A 0.35-mm threaded hole on top accepts mirrors and a wide variety of other devices. The Supper Ultrapositioner sells for \$945. *Charles Supper Company, 15 Tech Circle, Natick, Massachusetts 01760*

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New Literature

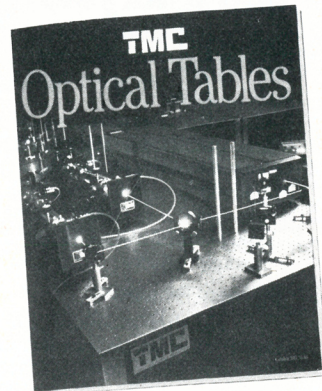
SI units—NIST Special Publication 330, 1991 Edition, is the US edition of the English-language translation of the sixth edition of *Le Système International d'Unités* (SI), the definitive reference on the SI published by the International Bureau of Weights and Measures in French. The US edition is edited by Barry Taylor. Single copies may be obtained from *Carolyn Stull, Room C210, Bldg. 245, National Institute of Standards and Technology, Gaithersburg, Maryland 20899* ■

NEW CATALOGS



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