

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.

Manipulators for Ultrahigh Vacuum

Nor-Cal is introducing a complete new line of manipulators, including single-axis manipulators, gimbals, three-axis manipulators, push-pull linear-motion feedthroughs, wobble sticks and rotary feedthroughs. Those models intended for use in ultrahigh-vacuum are made entirely from UHV-compatible materials. They also have special features such as ball bearings coated with molybdenum disulphide to prevent seizing after high-temperature bakeout. *Nor-Cal Products, 1967 South Oregon Street, PO Box 518, Yreka, California 96097*

Circle number 180 on Reader Service Card

Visualization Software for Fluid Dynamics

The University of Tennessee's Center for Space Transportation and Research is offering an advanced version of the visualization and display software program PLOT3D Version 3.6 Plus, for the UNIX-system-based HP Apollo 9000 Series 700 workstations from Hewlett-Packard.

PLOT3D, originally developed by NASA, is a widely used graphics program designed for the visualization and display of three-dimensional flow fields. The combination of PLOT3D Version 3.6 Plus software and these advanced graphics workstations should provide a useful tool for people doing computational fluid dynamics. PLOT3D allows functions of flow field variables to be displayed as contour plots, vectors and particle traces. Grids can be displayed as wire frames or as solid surfaces. The graphical image can be viewed in perspective or in an orthogonal projection from any viewpoint.

PLOT3D is available with 90 days of support and an unlimited site license for \$2000. Additional support, educational discounts and documentation

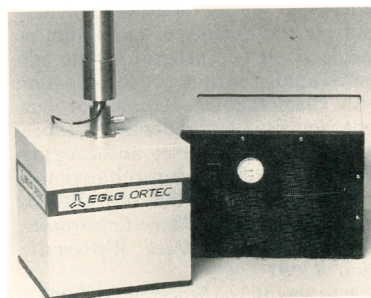
are also available. The program is supplied as executable code only. It and its derivatives are restricted to use within the US and its territories. This implementation of PLOT3D uses the industry-standard PHIGS graphics libraries.

Packard's Hewlett 700 series of workstations offers a range of price and performance options. The entry-level Model 705, offering 34 SPEC marks, sells for \$4990. *Center for Space Transportation and Research, UTSI Research Park, Tullahoma, Tennessee 37388-8897*

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Cooling Germanium Gamma Detectors Without LN₂

EG&G Ortec's Electricool II, is an inexpensive new electrical cooling option for germanium gamma-ray detectors that must be operated at -77 K. Like its predecessor, the second version obviates liquid nitrogen for applications, such as radioprotection monitoring stations or stack monitors, for which LN₂ is either unavailable or inappropriate. Electricool II has good temperature stability. Proprietary antimicrophonic technologies used in this unit yield energy resolution just about as good as one can get with LN₂ cooling, we are told. The unit can be powered by 115 or 220 V, and it requires no maintenance.



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JANSKY FELLOWSHIPS 1993

The National Radio Astronomy Observatory awards postdoctoral Jansky Fellowships which provide outstanding opportunities for research. Jansky Fellows may formulate and carry out investigations either independently or in collaboration with others within the wide framework of interests of the Observatory. A focus on topics in radio astronomy is desirable though not essential. Current areas of research include: cosmology; theoretical and observational studies of radio sources; the interstellar and intergalactic medium; structure and dynamics of galactic and extragalactic sources; physics of HII regions, stars, solar system objects, and astrometry. The research staff is also involved in instrumentation development and image processing; applicants in these areas are especially encouraged.

The NRAO observing facilities include the Very Large Array, a 27 element aperture synthesis instrument located near Socorro, New Mexico; a 140-foot fully steerable telescope in Green Bank, West Virginia; and a 12-meter millimeter-wave telescope in Kitt Peak near Tucson, Arizona; and the Very Long Baseline Array, a 10-element telescope with antenna sites spanning the continental U.S., Hawaii, and the Virgin Islands. The Observatory is building the Green Bank Telescope and is designing and developing the Millimeter Array. The full NRAO observing, computational, and support facilities are made available to Fellows. The Fellowship also includes a travel budget and scientific page charge support, as well as a vacation allowance, health insurance, moving allowance, and other benefits.

Appointments, which are available at any of the NRAO sites are made for a term of two years and may be renewed for a third year. Salaries for 1993 will be approximately \$32,500. Fellows must have received their PhD prior to beginning the appointment. Preference will be given to recent PhD recipients (1992 or 1993).

Application may be made to:
Director



NATIONAL RADIO ASTRONOMY OBSERVATORY

520 Edgemont Road
Charlottesville, Virginia 22903-2475

The application should include a curriculum vitae and a brief statement of the type of research activity to be undertaken at the NRAO.

The applicant should have three letters of recommendation sent directly to the NRAO. The application deadline is December 15, 1992. All letters of reference must be received by December 31, 1992. The announcement of the Jansky Fellowship appointments will be made in compliance with the AAS resolution on uniform notification dates for postdoctoral appointments.

The National Radio Astronomy Observatory is an equal opportunity employer M/F/H/V.

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Typically, detector cooldown from room temperature takes about 6 to 12 hours, depending on detector size. Startup is from room temperature, and it requires no ancillary vacuum pump. In case of power failure, Electricool II provides unattended restart, even from room temperature. Electricool II is available in a vertical configuration with EG&G Ortec coaxial detectors ranging in relative efficiency from 10% to 125%. *EG&G Ortec, 100 Midland Road, Oak Ridge, Tennessee 37831-0895*

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Gauss Meters and Hall Probes

Lake Shore's new 400 series of gauss meters offers a variety of means for measuring and testing magnetic fields. The emphasis, we are told, is on measurement stability and ease of use. These gauss meters are accompanied by the firm's own Hall probes, which are offered in a variety of configurations for use at temperatures from 4 K to 350 K.

The 400 series includes handheld and benchtop instruments capable of measuring magnetic fields from 0.02 gauss all the way up to 30 tesla. The new instruments offer a variety of displays, among them a liquid crystal display, a fluorescent message display



and an analog display. Resolution ranges from $3\frac{1}{2}$ digits in the handheld unit to $4\frac{3}{4}$ digits in the high-performance models.

All units offer a keypad that accesses all operating and programming functions. Other features include capture and display of maximum ac and dc amplitude; programmable, corrected analog output; probe excitation with distortion-free sinusoidal current source that reduces measurement drift and noise; autoranging; alarm setpoints; interchangeable probes; and IEEE-488 and RS-232 interfaces. *Lake Shore Cryotronics, 64 East Walnut Street, Westerville, Ohio 43081*

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Software for Finding Order in Chaos

Chaos Data Analyzer is Physics Academic Software's new system of 14 programs designed to detect hidden determinism, or chaos, in seemingly random data. It can analyze a record of up to 16 K data points using time-series analysis. The system employs a proprietary technique using singular-value decomposition to construct a set of model equations whose solutions predict the next few terms in a time series.

Developed by Julien Sprott (University of Wisconsin) and George Rowlands, (University of Warwick), Chaos Data Analyzer lets the user determine the properties of the equations underlying a particular manifestation of chaos. Its tools include calculations of the probability distribution, the power spectrum, the Lyapunov exponent, and various measures of the fractal dimension. The data can be displayed in many ways, including time records, phase-space plots, return maps, and Poincaré moves. The system can be used in lecture demonstrations or student tutorial in courses on nonlinear dynamics. Data can be read in from the user's disk file or they can be produced by the companion program Chaos Demonstrations, another PAS package developed by Sprott and Rowlands. Chaos Data Analyzer also includes sample data files. *Academic Software Library, Campus Box 8202, North Carolina State University, Raleigh, North Carolina 27695-8202*

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24-Channel Array Recorder

Gould has introduced the new TA5000 thermal array recorder. The firm describes the TA5000 as "the only 24-channel recorder with a single 15" thermal printhead and ... 48 megabytes of on-board memory." Users can therefore record data over longer periods, and they can increase the sample rate to 250 KHz on all channels.

The TA5000 utilizes the proprietary thermal printing technology of Micropulsing, a specially designed 15" printhead with dedicated circuitry that allows precise temperature control of each stylus. The exact temperature is determined for the best contrast at any speed, and for any grid pattern stylus with no blank zones. Traces are accurately positioned anywhere on the chart paper. The result, we are told, is extended

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life and higher reliability for the printhead, lower power consumption and less sensitive papers..

The TA5000 has an expandable, modular design for 8, 16 or 24 discrete channels. It provides storage, multiple set-ups, push-button controls, liquid-crystal display, chart ranging from less than a millimeter per minute to almost a meter per second, overlapping or discrete channel operating modes and programmable IEEE-48 or RS-422 interfaces.

The recorder is available with four input modules. The AM8000 is a programmable 8-channel dc amplifier with eight event channels for acquisition of high frequency signals up to 35 KHz into a memory of 12-bit words. *Gould Electronics, Test and Measurement Group, 8333 Rockside Road, Valley View, Ohio 44125*

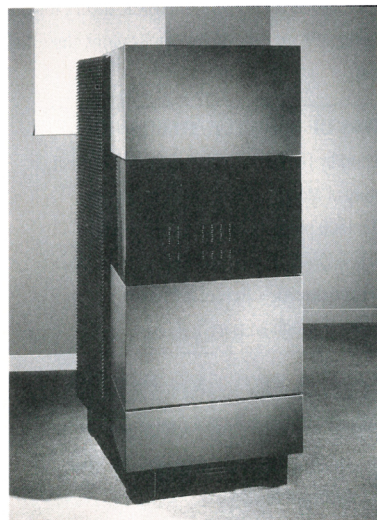
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Inexpensive Connection Machine Supercomputer

Thinking Machines has introduced what it describes as "the lowest-cost members of our CM-5 line of scalable supercomputers." The new Scale 3 systems combine peak processing capacity of up to 4 gigaflops with integrated multigigabyte file storage. All this operates under the control of the cMOST Unix operating system.

Prices of the Scale 3 systems start at \$750 000. First deliveries occurred in September. One of the first systems was recently installed at Columbia University.

Internally the system consists of up to 32 of the firm's 128-megaflop parallel processing nodes and many 9.6-gigabyte disk storage nodes, all inter-



communicating on the same high-bandwidth network and running the full set of Connection Machine software developed for the company's larger Scale 4, Scale 5, Scale 6 and Scale 7 systems. The processing nodes and the disk storage nodes are in effect operating as peers on the same network. Computer science users are particularly keen to combine processing and file access more tightly. *Thinking Machines, 245 First Street, Cambridge, Massachusetts 02142-1264*

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General Purpose Capacitance Manometers

MKS Instruments is introducing the next generation of Baratron capacitance manometers at the American Vacuum Society meeting in Chicago this month. The new 600 series, which is compatible with the earlier models, has electronic and sensor design changes intended to improve performance. The sensor enhancements, we are told, improve overpressure capability to 45 psia. The new series also has better radio-frequency interference. These improvements have been made in both the high-accuracy and general-purpose line of Baratrons. There is also a new version with an expanded temperature-control range up to 150 °C. *MKS, Shattuck Road, Andover, Massachusetts 01810*

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High-Purity Niobium for Superconducting Cavities

Atomet is offering very high purity niobium metal with a relative resistance ratio ranging from 500 to 1000. The content of tantalum, the principal contaminant in this material, is on the order of a few ppm. The niobium is available in rod, sheet and tube forms. Wire can also be produced to order. This grade of niobium is, we are told, suitable for the production of superconducting cavities for high-energy linear accelerators. It can be alloyed with high-purity tin and other superconductor materials. Its exceptionally high purity also suits it for use in sputtering targets, electron beam deposition and molecular beam epitaxy. *Atomet, 222 Sherwood Avenue, Farmingdale, New York 11735*

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