

new products

The descriptions of the new products

listed in this section are based on information supplied to us by the manufacturers. PHYSICS TODAY can assume no responsibility for their accuracy. For more information about a particular product, visit the website at the end of the product description.

Andreas Mandelis

Focus on software and data acquisition

Sound and vibration software

Data Translation Inc now offers VIBpoint framework application software support for the DT9837 and DT8837 series of sound and vibration measurement products. The software application provides an interface described as easy to use for individual channel configuration and display of vibration analysis functions including spectrum, power and magnitude, rms and peak. The combination of hardware and software is capable of both USB and Ethernet (LXI-compliant) vibration analysis and monitoring applications such as noise emission monitoring, predictive maintenance, and shock analysis. The VIBpoint framework application supports all the features of the hardware modules including selection of available hardware; individual configuration of each channel for analysis and display; and fast Fourier transform averaging modes, among them linear, exponential, and peak. *Data Translation Inc, 100 Locke Drive, Marlboro, MA 01752-1192, <http://www.datatranslation.com>*

Operating system for the analytical laboratory

Agilent's OpenLAB is a secure and scalable content operating system that gives laboratories the means to manage instruments, information workflows, and information created on end-user desktops. The system integrates analytical instrument control and advanced data analysis, enterprise content management, and business process management into a sin-

gle, scalable web-based system. Components include a single-system instrument control manager for the entire laboratory; web-based control, acquisition, and processing of data from more than 300 instrument modules from 25 different manufacturers; and viewers for chromatographic or mass spectral data that do not require native applications or proprietary file conversion. *Agilent Technologies, 5301 Stevens Creek Boulevard, Santa Clara, CA 95051, <http://www.agilent.com>*

Data graphing, animation, and analysis software

The DataScene software package was developed for scientists and engineers to graph and analyze data for publications, reports, and presentations. DataScene 2.0 has now been released for Windows, various Linux (SuSE, Redhat, and Mandriva), and other Unix/X11-based operating systems. New features include grid interpolation for the ColorGrid series and more clickable chart elements. With the interface—described as powerful and user-friendly—users can plot 2D and 3D graphs (including area, bar, pie, line, surface, and polar) using scientific, financial, and statistical data. They can manipulate, print, and export graphs; analyze data by various mathematical methods (for example, fitting curves, calculating statics, and fast Fourier transform); create graph animations for presentations, classes, and web pages; and monitor and chart real-time data. *CyberWit, 1000 Kiely Boulevard, Unit 90, Santa Clara, CA 95051, <http://www.cyber-wit.com>*

Electron tomography software

Electron tomography is an imaging technique that uses a transmission electron microscope (TEM) for advanced 3D nano-characterization in life and materials sciences. New DigiECT electron tomography software from Digisens requires only a raw tilt-series at input and is fully compliant with all TEM brands, all image acquisition modes—bright-field TEM (including a scanning version, BF-S/TEM), dark-field S/TEM, or energy-filtered TEM—and various schemes (linear, Saxton, or user-defined). To save time and prevent human errors, it achieves reduced 3D reconstruction times targeted to better

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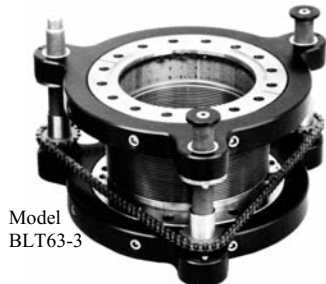
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1. 
2. 
3. Repeat if necessary.

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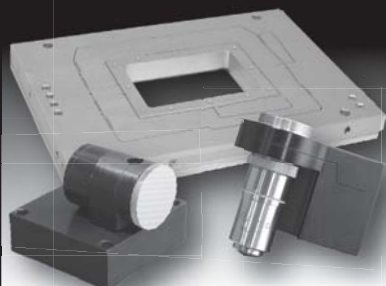
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image quality using iterative algorithms and minimizing manual interventions. The primary step consists of automatically aligning the images without markers such as gold beads, then numerically determining the location of the tilt axis in 3D (x, y, z). Perfect alignment is mandatory prior to the subsequent 3D reconstruction phase. *Digisens, 17 Allée du Lac d'Aiguebelette, BP 278-Savoie Technolac, 73370 Le Bourget-du-Lac, France, <http://www.digisens.fr>*

Mathematics-in-science and engineering software

Integrated Engineering Software has announced that the Output Manager enhancement to its line of products will benefit users who seek static and time-harmonic solutions to time-dependent problems. The major conceptual change is that the user specifies the required outputs before the problem is solved. This helps to show how changing the calculation accuracy or changing the physics affects the solution. The selected outputs are specified once and those data stored. If the physics or solver settings are changed, the sequence of desirable post-processing calculations need not be repeated. For 3D transient problems, massive amounts of solution data must be stored at each time step. It is thus only practical to save plots or results, such as force or flux linkage, at each time increment. The new Output Manager makes that possible. *Integrated Engineering Software, 220-1821 Wellington Avenue, Winnipeg, MB, R3H 0G4, Canada, <http://www.integratedsoft.com>*

Data visualization and analysis

The latest release of ITT Visual Information Solutions' scientific programming language, IDL 8.0, can create a range of data analysis and high-quality visualization solutions from complex numerical data. IDL 8.0's significant improvements—including a new graphics system, an enhanced programming language, and a streamlined development environment—make it easier to analyze and visualize data. The most notable enhancement in IDL 8.0 is a new graphics system that allows users to more easily produce meaningful, presentation-quality graphics, such as 2D and 3D plots, graphs, and maps, from many

types of numerical data. *ITT Visual Information Solutions, 4990 Pearl East Circle, Boulder, CO 80301, <http://www.itvis.com>*

LabVIEW robotics software

National Instruments' graphical system design software provides a standard development platform for designing robotic and autonomous control systems. An extensive robotics library has connectivity to standard robotic sensors and actuators, foundational algorithms for intelligent operations, and perception and motion functions for robots and autonomous vehicles. The 2010 software includes a new robotics internet protocol for implementation in real time and hardware for obstacle avoidance, inverse kinematics, and search algorithms. Because of its open graphical system design platform, the software can import code from other languages including C/C++, .m files, and VHDL; built-in drivers allow the software to communicate with a wide variety of sensors such as LIDAR, IR, sonar, and GPS devices. *National Instruments Corporation, 11500 North Mopac Expressway, Austin, TX 78759-3504, <http://www.ni.com/robotics>*

Microscopy instrumentation software

MadPLL from Mad City Labs is an instrument package that allows the user to create a flexible closed-loop atomic force or near-field scanning optical microscope at economical cost. Integrating hardware with built-in automated control, the package has been specifically designed for tuning forks and Akiyama probes. MadPLL includes a digital phase-lock loop controller, dedicated software, a sensor amplifier board, and a resonant probe mounting board. The software includes automated features such as parasitic capacitance control, resonant frequency detection, and Q calculation. The proportional-integral control loop integrated over the z-axis is fully compatible with the company's high-resolution, closed-loop nanopositioning systems. The company suggests that MadPLL is suitable for research and teaching laboratories. *Mad City Labs Inc, 2524 Todd Drive, Madison, WI 53713, <http://www.madcitylabs.com>*

Analysis and graphing software

OriginLab has released Origin 8.5, a

new version of its Windows-based analysis and graphing software. New features allow for more sophisticated representations of data and give users a greater ability to analyze data directly in graphs. Transparency control now allows graph elements to overlap and still maintain clarity and gradient color fill to increase contrast and visual impact. Zooming and panning can be done simultaneously on graphs and images, which allows more efficient inspection of data at multiple scales in two and three dimensions. Additional graphing improvements include an enhanced waterfall plot, a new vector plot template, and the ability to add error bars to 3D plots. A new virtual-matrix feature enables the creation of surface and contour graphs, including those with non-uniform axis scales, directly from worksheet data. *OriginLab Corporation, One Roundhouse Plaza, Suite 303, Northampton, MA 01060, <http://www.originlab.com>*

Supercomputer

A new supercomputer system from Fujitsu comprises more than 800 computer racks, each installed with ultrafast central processing units (CPUs) in a massively interconnected network. The next-generation supercomputer's nickname "K" derives from the Japanese word "kei" for 10^{16} , which represents the system's performance goal of 10 petaflops. The supercomputer, said to be high performance and reliable, will use the company's ultrahigh-speed SPARC64 VIIIfx processor. Each processor has a computational performance of 128 gigaflops and reliability commensurate with Fujitsu's mainframe technology. With a processing power of 2.2 Gflops/W—a two-thirds reduction in power consumption from previous levels—the CPUs are energy efficient. Processors and other major heat emitters are water-cooled. *Fujitsu Semiconductor America Inc, 1250 East Arques Avenue, M/S 333, Sunnyvale, CA 94085-5401, <http://www.fujitsu.com>*

Signal integrity network analyzers

LeCroy Corp has launched the SPARQ series of signal integrity network analyzers. The SPARQ measures 40-GHz S-parameters on up to four ports with single button operation at lower cost than traditional methods such as vector network analyzers. The SPARQ is a time domain instrument using TDR/T technology with patented LeCroy innova-



tions to rapidly acquire waveforms and measure the S-parameters of a device under test. The SPARQ measures both frequency and time domain results and outputs standard Touchstone S-parameter files ready to be loaded into the user's simulation software. A standard SPARQ includes all the hardware and software tools required for fast, accurate S-parameter measurements with high dynamic range. Three models are available: the SPARQ-4004E with 40 GHz, 4 ports, and internal calibration; the SPARQ-4002E with 40 GHz, 2 ports, and internal calibration; and the SPARQ-4002M with 40 GHz, 2 ports, and manual calibration. *LeCroy Corporation, 700 Chestnut Ridge Road, Chestnut Ridge, NY 10977-6499, <http://www.lecroy.com>*

Cray supercomputer

The Cray XE6 supercomputer, designed to scale to over a million processor cores, has been engineered to meet growing demands for scalability, reliability, and flexibility. The Cray XE6 features infrastructure enhancements with two innovative new technologies: AMD multicore processors and Gemini interconnect. Each Cray XE6 blade includes four compute nodes with two AMD Opteron 6100 series 8- or 12-core processors each coupled with its own memory and Gemini communication interface. The Gemini interconnect is capable of tens of millions of message-passing interface messages/s and is designed to complement massively multicore processors. The most recent release of the Cray Linux Environment includes a "cluster compatibility" mode



that supports out-of-the-box compatibility with Linux/x86 versions software from independent vendors. *Cray Inc, 901 Fifth Avenue, Suite 1000, Seattle, WA 98164, <http://www.cray.com>*

Software customization

The Zephyr benchtop 96- or 384-channel liquid handler can be used for drug discovery and research applications including plate preparation, replication or reformatting, serial dilutions, and cell-based and genomics assays. It is powered by Caliper's Maestro graphical software for assay development and execution. Described as easy to use, Maestro liquid-handling software allows for the creation of custom screens to guide the user through assay setup. With point-and-click method development, a comprehensive yet simple operator interface, and enhanced error recovery, Maestro software gives users the ability to create and run automated liquid-handling methods. It provides real-time dialog between the liquid handler and the user, including both programmable and unanticipated notifications. In the event of an error, Maestro can recommend a step-by-step recovery procedure to ensure sample preservation and data integrity. *Caliper Life Sciences, 68 Elm Street, Hopkinton, MA 01748, <http://www.caliperls.com>*

Data loggers

A variety of portable datalogging solutions are available from MCC for voltage, temperature, humidity, current, encoder, and digital I/O monitoring. The LGR-5320 series of standalone, multifunction data-acquisition loggers offers a high-speed sampling rate of 200 kilosamples/s plus industrial digital inputs, advanced triggering and alarming options, and quadrature encoder inputs. They have 16-bit resolution, 16 analog and 16 digital inputs and 4 encoder inputs, and they perform the aforementioned high-sampling-rate measurements with direct storage to a Secure Digital (SD) memory card. Users can collect data to monitor systems and events without dedicating a PC. Each device includes a 4-GB SD memory card and is expandable to 32-GB SD for collecting up to 16×10^9 measurements. *Measurement Computing Corporation, 10 Commerce Way, Norton, MA 02766, <http://www.mccdaq.com>*

Computer servers

New Penguin Altus servers have 8 or 12 cores per CPU socket to serve more webpages and compute more simulations. New processors provide for upgraded input/output (I/O) capabilities. The Altus servers feature PCI Express



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2.0 expansion slots that match up well with 40 Gbps Infini-Band fabric. For high-performance computing cluster applications this means 48 cores per rack unit or 2304 cores per fully loaded rack. Expansion options include Infini-Band and 10-Gb Ethernet interfaces and a local scratch drive using solid-state drive (SSD) or serial advanced technology attachment (SATA) technology. The new servers are tested and preconfigured for Linux compatibility. The Altus 1804 is a high-performance computing cluster with two or four AMD Opteron 6100 series processors, 32 dual in-line memory modules, up to 256 GB of memory capacity, and up to three hot-swap SATA or SSD drive storage systems. *Penguin Computing Inc, 45800 Northport Loop West, Fremont, CA 94538, <http://www.penguincomputing.com>*

Software for photovoltaic applications

Measuring the composition of elements helps determine device performance, and the distribution of specific elements can provide information on grain boundary performance and localized electric fields. According to EDAX, its new orientation imaging microscopy (OIM) 6.0 electron backscatter diffraction (EBSD) software is the first micro-analysis software package written for a 64-bit processor and Microsoft Windows 7 compatibility with datasets reaching $> 40 \times 10^6$ data points. Features include advanced visualization tools, an interactive status bar, and a data processing log to automatically record



post processing performed on datasets. Improvements to EDAX's patented Chi-Scan technology, a combined energy dispersive spectrometer-EBSD tool for multiphase analysis, offer enhanced phase differentiation, especially for nanoscale measurements. Together with OIM 6.0 software, EBSD techniques can be used to better understand the features of photovoltaic thin-film solar cells. *EDAX, 91 McKee Drive, Mahwah, NJ 07430, <http://www.edax.com>* ■