

Focus on software and data acquisition **FREE**

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*Physics Today* **67** (12), 64–66 (2014);  
<https://doi.org/10.1063/PT.3.2628>



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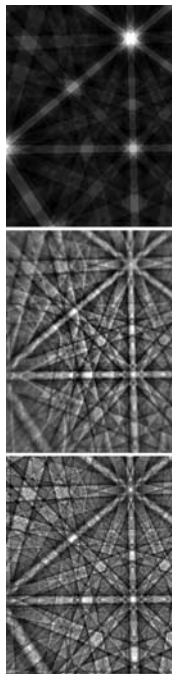
### Focus on software and data acquisition

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.

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## Software for EBSD pattern simulations

Bruker has introduced Esprit Dynamics, a software tool for high-resolution simulations of electron backscatter diffraction patterns. The EBSD simulation



process relies on the analysis of Kikuchi electron diffraction patterns obtained from microscopic regions of a sample in a scanning electron microscope. Kinematic simulation models to date are limited in their detail and thus the analytical value they can provide. Esprit Dynamics is the first commercially available software to calculate Kikuchi patterns using the dynamical theory of electron diffraction. Based on a proprietary software engine, the program rapidly provides detailed high-resolution simulations. It supports exact crystal orientation analysis and accurate phase identification, optimizes system calibration, and simulates

details such as higher-order Laue rings and patterns of noncentrosymmetric crystals. *Bruker Nano Analytics, 230 Old Littleton Road, Harvard, MA 01451, <http://www.bruker.com>*

## Data logger

A multipurpose data acquisition instrument, Campbell Scientific's CR6 measurement and control data logger is suitable for many applications, and its new universal terminals provide the flexibility to meet changing requirements. Conventional terminals are limited to a single sensor-output type; the 12 universal terminals on the CR6 are software configurable for connection to sensors with various output types. The data logger also performs static vibrating-wire measurements with no additional peripheral, which provides further flexi-



bility. The compact CR6 offers high-quality measurements, fast processing speed, and easy wiring. It features integrated communication options, onboard microSD memory card storage, internal power management for reduced power consumption, and surge and overvoltage protection. *Campbell Scientific Inc, 815 West 1800 North, Logan, UT 84321-1784, <http://www.campbellsci.com>*

## USB module for noise and vibration measurement

Data Translation has announced the DT9857 high channel count USB module for noise and vibration measurement. Its front-end design allows simultaneous measurement of 16 24-bit integrated electronic piezoelectric (IEPE) sensor inputs at a sampling rate of 105.6 kS/s. The module is suitable for precision measurement of microphones, accelerometers, and other transducers with a large dynamic range. Applications include audio, acoustic, and vibration testing. In addition to 16 analog input channels, the module features a 32-bit tachometer, three counters, and eight digital inputs, all synchronous in the analog input data stream. It allows both hardware and software triggers and pre- and post-trigger sampling. Up to four modules can be triggered simultaneously for perfectly synchronized measurements of up to 64 IEPE sensor inputs. *Data Translation Inc, 100 Locke Drive, Marlboro, MA 01752-1192, <http://www.datatranslation.com>*

## Graphics system

A new release of MathWorks' MATLAB includes a new graphics system, big data capabilities, and improved collaboration features for packaging and sharing code and for integrating source con-

trol. The updated default colors, fonts, and styles in the graphics system are designed to make it easier to interpret and gain insight from data. New syntax for changing the properties of graphics objects makes it simpler to customize visualizations. Among other new features are rotatable tick labels, support for multilingual text and symbols, and automatic updating of date and time tick labels. Big data capabilities include simplified ways to access and analyze big data text files and databases and support for the MapReduce programming technique directly within MATLAB. Those capabilities also scale for use on the big data platform Hadoop. *The MathWorks Inc, 3 Apple Hill Drive, Natick, MA 01760-2098, <http://www.mathworks.com>*

## Compact DAQ controller

The CompactDAQ four-slot controller now available from National Instruments (NI) integrates an Intel Atom dual-core processor and high-accuracy measurements into a small, economical form factor. Combining the processor, signal conditioning, and input/output (I/O) into a single system reduces system cost and complexity while increasing measurement accuracy. Fewer components, connections, and wiring are needed. The Intel Atom processor can



run either industry-standard Windows Embedded 7 or NI Linux Real-Time. The combination of industry-standard operating system options and LabVIEW system design software allows users to easily port LabVIEW code from existing measurement systems to the new CompactDAQ controllers. LabVIEW and more than 60 sensor-specific I/O modules for CompactDAQ can be combined to quickly customize data acquisition systems to meet specific application needs. *National Instruments Corporation, 11500 North Mopac Expressway, Austin, TX 78759-3504, <http://www.ni.com>*

## Data analysis and graphing software

OriginLab has released Origin and OriginPro 2015, which have many new

features and improvements to version 9.1. Among the ease-of-use enhancements are collapsible menus, project file search for strings, thumbnail previews of graphs and tooltips that display folder or window comments in Project Explorer, the choice of an icon or details listing of project contents, a redesigned graph axis dialog, and an improved graph legend with support for bubble scales. Other features are new graphs such as heat-map and 2D kernel density plots and 3D batch plotting. User-defined ordering of categorical data for graphing and analysis, a distribution fit tool, variance analysis of repeated measurements with unbalanced data, and integration with the Python scripting language are also included in the software. *OriginLab Corporation, One Roundhouse Plaza, Suite 303, Northampton, MA 01060, <http://www.originlab.com>*

## Modeling and simulation software

The recently released version 5.0 of Multiphysics software by COMSOL includes the novel application builder, product updates, and three new additions. With the application builder, included with the Windows operating system version of 5.0, users can take any Multiphysics model and produce a simple simulation application with its own interface to share with other users. They can include only the parameters relevant to the design of a specific device or product when building their specialized application. The ray optics module, a new add-on product, allows Multiphysics simulations to be integrated into the modeling of geometrical optics. Users can compute the trajectory of rays in graded and ungraded media and model polychromatic, unpolarized, and partially coherent light. *COMSOL Inc, 1 New England Executive Park, Burlington, MA 01803, <http://www.comsol.com>*

## Life sciences software

Agilent Technologies has optimized its GeneSpring software package for researchers working on genomics, proteomics, metabolomics, transcriptomics, or any combination of life sciences disciplines. The package includes GeneSpring GX and Mass Profiler Professional, which use correlation analysis to allow users to examine the strength and direction of the relationship among samples and among genes,

proteins, and metabolites. A correlation coefficient is calculated and displayed in the form of a heat map. Users can visualize sample attributes such as tumor size, experimental time points, and diet. Changes in the measured “omics” data can be lined up with corresponding changes in the sample attributes for fast detection of associations. The pathway architect toolbox now supports the Kyoto Encyclopedia of Genes and Genomes pathways. Users with KEGG licenses can search, score, save, and share results from their hard drive. *Agilent Technologies Inc, 5301 Stevens Creek Boulevard, Santa Clara, CA 95051, <http://www.chem.agilent.com>*

## Processor board for data acquisition systems

Computer Aided Solutions (CAS DataLoggers) and Jäger have introduced a new processor board for ADwin-Pro II data acquisition and control systems. The Pro-CPU-T12 processor, with a 64-bit double-precision floating-point unit for math co-processing, is five times as fast as its predecessor module, the CPU-T11. Largely compatible with the



software of previous versions, the new module offers real-time computing. Ethernet support enables high-speed data transfer and stand-alone data recording in applications where there is no PC or connection to one. The solution is suitable for demanding applications such as physics experiments, vibration monitoring, failure analysis, and high-speed data acquisition. The processor module, the ADwin CPU, is the center of each ADwin-Pro II data acquisition system. It executes the ADbasic programming instructions and accesses the inputs, outputs, and interfaces of the other modules. *Computer Aided Solutions LLC, 12628 Chillicothe Road, Unit J, Chesterland, OH 44026, <http://www.dataloggerinc.com>*

## Spectral surface mapping

Craic Technologies’ spectral surface mapping (S2M) allows microspectrometer users to map point by point spectral



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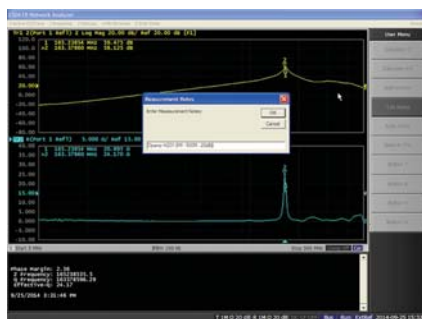
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responses across the surfaces of their samples. The S2M plug-in module, which is used with Craic Technologies' LambdaFire microspectrometer software, employs UV/visible/near-IR transmission, absorbance, emission, fluorescence, and polarization microspectral data to create surface profiles with microscopic spatial resolution. It can create maps rapidly and automatically from data from Craic's Apollo Raman microspectrometers. When employed with the company's microspectrometers with programmable stages, S2M allows users to automatically take spectral measurements with user-defined mapping patterns up to the movement limits of a stage itself. *Craic Technologies Inc, 948 North Amelia Avenue, San Dimas, CA 91773, <http://www.microspectra.com>*

## Noninvasive stability measurements

Picotest offers software that allows the Keysight E5061B vector network analyzer to perform noninvasive stability margin (NISM) measurements. An alternative to Bode plot measurements,



NISM measurements allow users to assess circuit or filter stability even when the control loop is not accessible. NISM determines the phase margin from an output impedance measurement via group delay. That capability allows users to measure through their output impedance the stability of operational amplifiers, voltage references, voltage regulators, switching amplifiers, input filters, and power converters. As with other E5061B measurements, results can be saved or printed. *Picotest, 28715 North 20th Avenue, Phoenix, AZ 85085, <http://www.picotest.com>*

## Graphing software

Golden Software has released Grapher 11, a 2D and 3D graphing program that converts data into more than 60 fully

customizable graph types, including three new ones: polar vector plots, ternary class scatter plots, and doughnut plots. Polar vector plots connect two points on a polar coordinate system with an arrow. The ternary class scatter plot creates a three-system ternary diagram with symbols that can change based on a fourth variable. The doughnut plots, which can be in 2D or 3D, create graphs similar to a pie chart, but with a hole in the center. The 2D doughnut plots can be stacked to compare variables as they change. Another feature allows axes to be linked so that changes only need to be made to one axis. All linked axes automatically update when the master controlling axis changes. *Golden Software Inc, 809 14th Street, Golden, CO 80401-1866, <http://www.goldensoftware.com>*

## Life sciences imaging and analysis software

Leica Microsystems' Application Suite X (LAS X) imaging software for life sciences spans wide-field, confocal, and superresolution platforms. It introduces new features for microscopic image acquisition, processing, and analysis while maintaining established principles of its predecessor software LAS AF, such as the workflow-based approach. LAS X guides researchers intuitively through image acquisition, data recording, and evaluation in live-cell imaging. Customized system settings can be saved for maximum reproducibility. Users can add to the basic version, LAS X Core, other modules for specific applications such as high content screening, Förster resonance energy transfer, fluorescence recovery after photobleaching, multidimensional analysis, colocalization, and measurements. To further simplify wide-field system usage, an easy operation mode is available for users to design their own interface layout. *Leica Microsystems Inc, 1700 Leider Lane, Buffalo Grove, IL 60089, <http://www.leica-microsystems.com>*

## Dual-probe data loggers

MadgeTech has designed a series of dual-probe data loggers to accommodate a broad range of applications. The

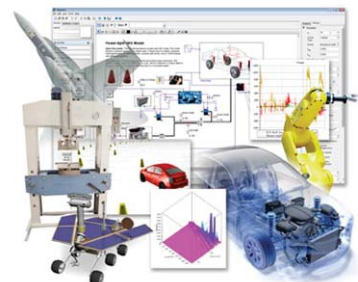
HiTemp140X2 series has three style options combined in various pairings: the TD, FP, and PT. The TD features a 2-inch, fast-response, transitional diameter, rigid probe.

It can accurately measure ambient temperatures from  $-200^{\circ}\text{C}$  to  $260^{\circ}\text{C}$ . The FP has a 72-inch, flexible resistance temperature detector (RTD) probe. The PT provides a 24-inch, stainless-steel, bendable RTD probe, which is available with a 1- or 5-inch probe tip. The sharp tip can be inserted to record a sample's internal temperature. The bendable probes can measure extreme temperatures from  $-200^{\circ}\text{C}$  to  $350^{\circ}\text{C}$  with an accuracy of  $\pm 0.1^{\circ}\text{C}$ . *MadgeTech Inc, 6 Warner Road, Warner, NH 03278, <http://www.madgetech.com>*



## Software design tools

The latest release of MapleSim, Maplesoft's advanced system-level modeling and simulation platform, makes it easier to explore and validate designs, create and manage libraries of custom components, and use MapleSim models within the engineering tool chain.



MapleSim physical modeling and simulation reduce model development and analysis times while producing fast, high-fidelity simulations. A new results manager provides flexibility when investigating simulation results and exploring designs. Multiple runs of simulations, including of a single model and of different models, can be compared at the click of a button. Users can instantly plot the behavior of any variable, including those not explicitly probed during a simulation. Other tools available through the results manager include the ability to easily visualize the correspondence between the 2D plot results and the 3D visualization of the model during simulation. *Maplesoft, 615 Kumpff Drive, Waterloo, ON N2V 1K8, Canada, <http://www.maplesoft.com>* ■