

NEW PRODUCTS

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. For all new products submissions, please send to Rnanna@aip.org.

Andreas Mandelis

Mathematical programming software

MathWorks' latest release of MATLAB includes new capabilities designed to simplify managing data too big to fit in memory. Researchers can work with out-of-memory data through tall arrays that use familiar MATLAB functions and syntax with hundreds of math, statistics, and machine-learning algorithms. The arrays make it unnecessary to learn big data programming. Code can run on Hadoop clusters or be integrated directly into Spark applications. Release 2016b features a timetable data container for indexing and synchronizing time-stamped tabular data; string arrays to help manipulate, compare, and store text data efficiently; and new functions for preprocessing data. Other enhancements include the new risk management toolbox, designed for developing risk models and performing risk simulation, and updates and bug fixes to 83 other products. MathWorks has also improved its Simulink graphical programming environment and added new capabilities. *The MathWorks Inc, 1 Apple Hill Dr, Natick, MA 01760-2098, www.mathworks.com*

Touch-screen data loggers

Omega Engineering's OM-DAQXL portable data logger is available with 8- or 16-channel analog inputs and a 7-inch resistive touch color display screen. All inputs are programmable: With the touch-screen user interface, they can be configured for units of measure such as millivolts, volts, and milliamps; devices such as thermocouples, resistance temperature detectors, thermistors, and strain gauges; and sample acquisition rates. The OM-DAQXL analyzes at a rate of up to 125 samples/s. Data can be displayed as waveform, table, waveform and table, and digital. The unit has four digital inputs and outputs, four alarm outputs, and 1 GB of internal memory. It comes with a rechargeable lithium-ion battery, a universal AC adapter, a 32 GB SD card, a 32 GB USB thumb drive, five insulated type K thermocouples, and other accessories. It can be wall mounted or operated on a bench. Recorded data files can easily be reviewed and analyzed on the OM-DAQXL or on a computer by transferring the file to the PC and opening it in Excel or other data analysis software. *Omega Engineering Inc, 800 Connecticut Ave, Ste 5N01, Norwalk, CT 06854, www.omega.com*



Data acquisition software

Measurement Computing has released version 3.0 of its DAQami data acquisition application, which is compatible with most of the company's devices. New features include support for analog, digital, and counter/timer outputs: Users can set the wave type, frequency, and duty cycle of analog outputs; control digital outputs on a per-channels basis; and set the frequency and duty cycle of counter/timer outputs. They can display, log, review, and export data to programs such as Microsoft Excel and MATLAB. Users also can quickly configure acquisition and channel options and choose among various data displays. DAQami is supported by Microsoft Windows 7, 8, 10, and Vista operating systems. It can be downloaded from www.mccdaq.com/DAQami for a 30-day trial. *Measurement Computing Corporation, 10 Commerce Way, Norton, MA 02766, www.mccdaq.com*

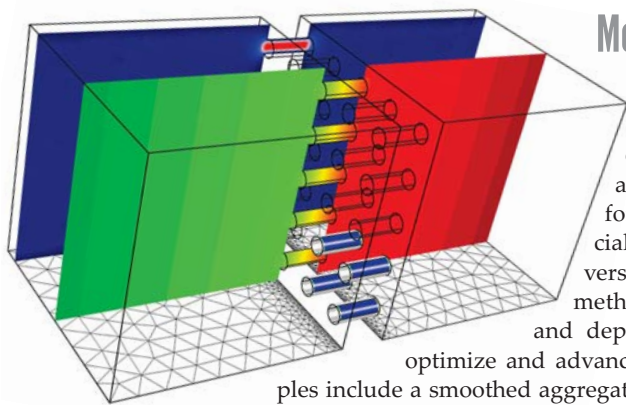
Digitizers for multichannel data acquisition



Spectrum has expanded its LXI-based digitizerNETBOX series with eight DN6.49x data acquisition instruments that offer from 24 to 48 fully synchronized channels. The instruments are suitable for applications in which numerous signals need to be acquired and analyzed with speed and precision, such as with sensors, detectors, rectifiers, and antennas. Each channel is equipped with a 16-bit analog-to-digital converter (ADC) and a front-end amplifier with six input ranges from ± 200 mV to ± 10 V, switchable input impedance of 50 Ω and 1 M Ω , and programmable offset. Models are available with maximum rates of 10 or 60 MSamples/s with onboard acquisition memory of 64 or 128 MSamples/channel. According to the company, the 16-bit ADCs offer better resolution than other measuring systems, such as scopes or analyzers. All the ADCs are clocked synchronously to ensure that signal timing and interchannel phase relationships are always preserved. *Spectrum Systementwicklung Microelectronic GmbH, Ahrensfelder Weg 13-17, 22927 Grosshansdorf, Germany, www.spectrum-instrumentation.com*

DAQami[™] mccdaq.com





Modeling and simulation software

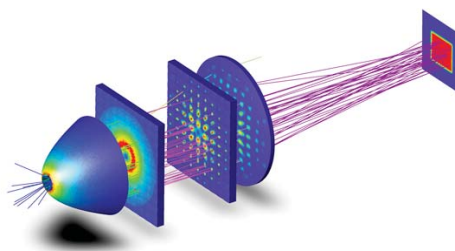
Comsol has released the latest iteration of its Multiphysics and Server simulation software for numerical simulation specialists. Enhancements to Comsol version 5.2a include new solvers, methods, and application design and deployment tools to help users optimize and advance modeling processes. Examples include a smoothed aggregation algebraic multigrid solver suitable for linear elastic analysis and an explicit solver based on the discontinuous Galerkin method for acoustics in the time domain. The domain decomposition tool has been refined and can now handle larger problems, especially those that involve strongly coupled multiphysics phenomena. Visualization enhancements advance postprocessing. Improvements have been made to the application builder and to the add-on products that augment Multiphysics. They provide additional interfaces for electrical, mechanical, fluid flow, and chemical applications. **Comsol Inc.**, 100 District Ave, Burlington, MA 01803, www.comsol.com

System design software



The 2016 release of LabVIEW from National Instruments (NI) introduces new channel wires that reduce complex asynchronous communication to a single wire. According to NI, the innovation simplifies communication between parallel sections of code, improves code readability, and reduces development time. Users can set up software architectural patterns that natively have multiple sources without having to create and maintain considerable amounts of custom software in the background. NI claims that much of the usefulness of LabVIEW is due to the openness of the product and the ecosystem supporting it. The latest version has enhanced interoperability with the Python programming language and third-party devices. Other improvements include more RAM and memory with new 64-bit add-on support for five LabVIEW modules and toolkits, including the control design and simulation module. LabVIEW 2016 is fully compatible with the latest NI hardware technologies for RF design and testing, embedded control and monitoring, and engineering education. **National Instruments Corporation**, 11500 Mopac Expy, Austin, TX 78759-3504, www.ni.com

Optics and illumination simulation software



OpticStudio 16 from Zemax includes new features and functionalities to simplify and accelerate the process of designing optics and illumination products. Users can accurately analyze stray light and scatter with a single-step conversion tool that includes all aspects of source and detection data. Design tool sets have physics-based algorithms to analyze, simulate, and optimize optical systems within tolerance specifications. Analysis and simulation tools create and improve optical, illumination, and laser systems. Optimization tools automatically improve the performance of optical and illumination designs and save time by eliminating manual tests of design iterations. A further update to the software, OpticStudio 16.5, adds new stray-light analysis tools to identify and block unwanted rays in an optical system. The new features streamline nonsequential stray-light analyses to deliver consistent and accurate results faster. **Zemax LLC**, 10230 NE Points Dr, Ste 540, Kirkland, WA 98033, www.zemax.com

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Compact data logger

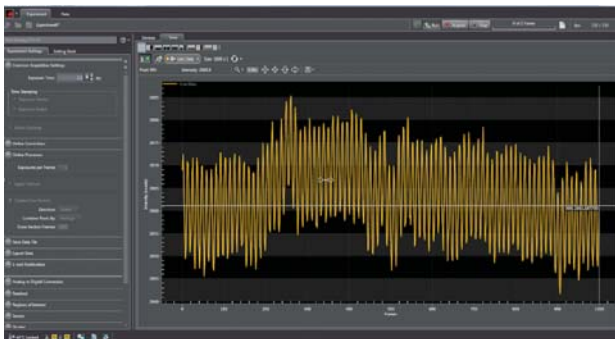
The CR300 is a small, economical data logger that not only includes most of the features of Campbell

Scientific's other data loggers but also offers faster communications, low-power requirements, and excellent analog input accuracy and resolution. The simple, rugged instrument allows users to measure multiple analog voltage, pulse output, and analog and digital 4–20 mA current sensors. It can also measure smart sensors using RS-232 or SDI-12 communication protocols. The CR300 features surge and electrostatic discharge protection and is easy to set up with PC software and USB connectivity. It is powered by an integrated 12 V solar battery equipped with a built-in power regulator or by an AC/DC power converter. It can connect with the internet via email and file transfer, transmission control, and hypertext transfer protocols. It can network wirelessly to another node or internet gateway with the integrated radio option and connect via various modems for remote telemetry. **Campbell Scientific Canada**, 14532 131 Ave NW, Edmonton AB T5L 4X4, Canada, www.campbellsci.ca



Software for data logging and instrument control

Keysight Technologies has announced version 3.5 of its BenchVue software. The platform provides multiple-instrument measurement applications, data capture, and solution applications. When an instrument is plugged into a PC over a local area network, general-purpose interface bus, or USB, it is automatically configured for use in BenchVue. No programming or separate instrument drivers are required, so testing can be accelerated. With BenchVue's test flow app, users can create automated test sequences in minutes. The app combines BenchVue's data capture and analysis tools with the power of a sequencer. The software supports variables and math; for applications that require instrument programming, it integrates command expert sequences. BenchVue 3.5 also features new apps that support signal generators, universal counters, and Keysight's FieldFox series of handheld analyzers. **Keysight Technologies Inc**, 1400 Fountaingrove Pkwy, Santa Rosa, CA 95403-1738, www.keysight.com



Scientific imaging and spectroscopy software

Princeton Instruments has upgraded its LightField software with support for Windows 10 and for its recently launched Sophia family of deep-cooled, multiport CCD cameras and ProEM electron-multiplying CCD cameras. Version 6.0 includes a new math engine for analyzing 64-bit data in real time, an improved Smart Search feature that directs users to the controls they want as they are typing, an interactive virtual optical bench for convenient management of multiple experiment setups, and automatic export of data in various formats. LightField supports the company's IntelliCal wavelength and intensity spectral calibration, and it

allows for integration of hardware controls and direct data acquisition into National Instruments' LabVIEW and MathWorks' MATLAB. It is suitable for use in Raman spectroscopy, fluorescence, combustion, astronomy, and quantum and x-ray imaging. **Princeton Instruments**, 3660 Quakerbridge Rd, Trenton, NJ 08619, www.princetoninstruments.com

Illumination and optical design software

Lambda Research has released the latest version of RayViz (formerly TracePro Bridge for Solidworks). It is an add-in to SolidWorks, a solid modeling computer-aided design (CAD) program from Dassault Systèmes. It enables SolidWorks users to apply and save optical properties directly in the SolidWorks CAD model and to trace and visualize rays. With RayViz, a single model can be used both by Lambda Research's TracePro optomechanical software, which is used for designing, analyzing, and optimizing optical and illumination systems, and by Solidworks, which aids in mechanical design and in modifying optical properties. The new version of RayViz adds ray-tracing functionality to Solidworks models to help resolve stray-light issues, verify geometry, and check for vignetting and cross talk by visualizing rays traced through optical components. A complete optical model can be exported for use in TracePro for ray tracing and further optical analysis. **Lambda Research Corporation**, 25 Porter Road, Littleton, MA 01460, www.lambdaresearch.com

