

NEW PRODUCTS

Focus on software, test, measurement, and instrumentation

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 its description. Please send all new product submissions to ptpub@aip.org.

Andreas Mandelis



Extra-long-scan noncontact thickness gauges

Bristol Instruments has added two models to its line of noncontact optical thickness gauges. The 157XLS (extra-long-scan) and 137XLS systems extend the maximum measurement limit to 80 mm. The new

capability was added primarily to accommodate thicker, multielement optical components and assemblies and large-diameter medical devices. According to the company, the gauges deliver industry-leading accuracy: as high as $\pm 0.1 \mu\text{m}$ for the 157XLS, with long-term repeatability of up to $\pm 0.02 \mu\text{m}$, and as high as $\pm 1.0 \mu\text{m}$ for the 137XLS, with long-term repeatability of $\pm 0.05 \mu\text{m}$. The instruments use the properties of light to measure the thickness of a material without damaging or deforming it. Total thickness and up to 31 individual layers can be measured simultaneously.

Bristol Instruments Inc, 770 Canning Pkwy, Victor, NY 14564, www.bristol-inst.com

Cryogenic software with remote control

Innovative Cryogenic Engineering (ICE) Oxford developed version 3 of its LabVIEW-based software to provide a user-friendly computer interface to remotely control temperature and pressure via sensors, heaters, and needle valves. The new capability also facilitates remote diagnostics and improved support from the company's factory in Oxfordshire, UK. The software permits the simultaneous plotting, logging, and control of a maximum of eight temperature sensors at any given time. By monitoring performance graphs while the system runs, it observes system progress and reduces errors. The modular software allows for additional features such as magnetic field control, a ^3He dipper, and the company's ICE Mini Cube gas-handling system. **ICE Oxford**, Ave Four, Station Lane, Witney, Oxford OX28 4BN, UK, www.iceoxford.com



Dynamic vertical positioning system

Physik Instrumente now offers its V-308 voice coil PIFOC, a magnetic direct-drive-based vertical positioning system with a 7 mm travel range, magnetic-weight-force compensation, and exceptional dynamics, according to the company. At its core is a single-axis slider with high-precision lateral-crossed roller guides placed on the base body. It is driven by a centered PIMag voice coil motor specifically developed for high dynamics. The system features optical focusing, scanning, and height adjustment of sensors. Acceleration up to 8 m/s^2 and a maximum velocity of 200 mm/s yield step-and-settle times of below 15 ms for 100 nm and 250 nm step sizes with a $\pm 15 \text{ nm}$ error band for fast data acquisition and high productivity. The magnetic-weight-force compensation ensures a levitation of the slider and mounted load without power supply and prevents an uncontrolled crash in case of a power failure or when the controller is switched off. Applications for the V-308 PIFOC include multiphoton fluorescence microscopy, magnetic tweezers, laser materials processing, and wafer inspection.

Physik Instrumente LP, 16 Albert St, Auburn, MA 01501, www.pi-usa.us



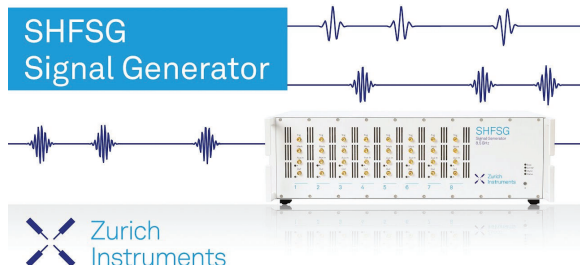
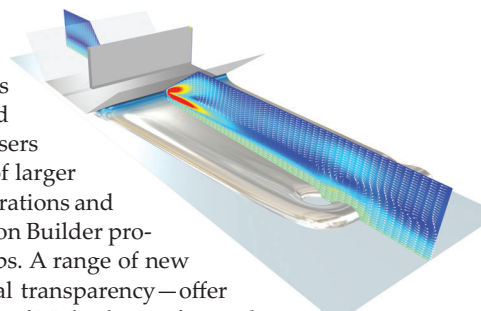
Event-based power-analysis software

Keysight Technologies has enhanced its X8712A system for device battery-life optimization by adding KS833A2A event-based power-analysis software. The X8712A can help optimize the battery life of internet-of-things (IoT) devices by delivering an accurate view of how the devices behave to the subsystem level and of their charge-consumption profile. The software offers an easy-to-use visualization tool via the company's PathWave software and a new continuous data-logging mode with measurement and data collection. To better understand device behavior and charge-consumption profiles over many operating cycles,

users can employ patented seamless current-ranging technology from A down to nA. That technology can capture the dynamic current consumption of an IoT device over up to eight days as it transitions between active, idle, and sleep modes. The software automatically calculates battery life based on the charge-consumption profile; eliminating manual calculation speeds analysis time. **Keysight Technologies Inc**, 1400 Fountaingrove Pkwy, Santa Rosa, CA 95403-1738, www.keysight.com

Modeling and simulation software

Comsol has updated its Multiphysics software for creating physics-based models and simulation applications. Among the additions in version 5.6 are faster and more memory-lean solvers for multicore and cluster computations designed for users working with large models that have millions of degrees of freedom. Handling of larger computer-aided design assemblies has been improved with more robust solid operations and easier detection of gaps and overlaps. New application templates in the Application Builder provide a quick, intuitive way to create organized user interfaces for simulation apps. A range of new graphics features—including clip planes, realistic material rendering, and partial transparency—offer enhanced visualization for simulations. Four new products expand the capabilities of Multiphysics for modeling fuel cells and electrolyzers, polymer flow, control systems, and high-accuracy fluid models. **Comsol Inc**, 100 District Ave, Burlington, MA 01803, www.comsol.com



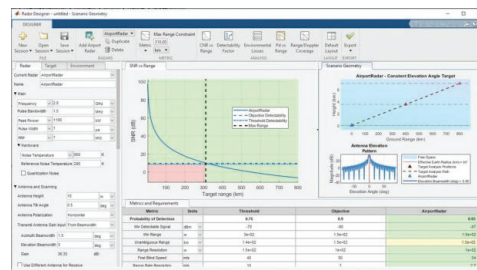
Signal generators for quantum computing

According to Zurich Instruments, its SHFSG Signal Generator is the first instrument of its kind on the market. Designed to control superconducting and spin qubits and reach higher gate fidelities with less overhead time, the SHFSG operates directly at qubit frequencies without mixer calibration. It delivers state-of-the-art spectral purity and stability. The SHFSG generates freely programmable pulse sequences on up to eight outputs with a signal bandwidth of 1 GHz and a variable output frequency of up to 8.5 GHz. Such microwave signals, required to control the state of qubits in quantum computers, previously had to be generated using a combination of arbitrary waveform generators, microwave signal generators, and mixer circuits. The SHFSG brings those instruments together in a single box and eliminates the need for time-consuming and error-prone calibration routines. The versatile instrument can cover the various approaches pursued in diverse quantum technology endeavors. **Zurich Instruments AG**, Technoparkstrasse 1, 8005 Zürich, Switzerland, www.zhinst.com

tion of arbitrary waveform generators, microwave signal generators, and mixer circuits. The SHFSG brings those instruments together in a single box and eliminates the need for time-consuming and error-prone calibration routines. The versatile instrument can cover the various approaches pursued in diverse quantum technology endeavors. **Zurich Instruments AG**, Technoparkstrasse 1, 8005 Zürich, Switzerland, www.zhinst.com

Mathematical programming software

MathWorks has introduced version 2021a of its MATLAB and Simulink software. In addition to updates to various products, new capabilities in MATLAB include dynamic controls in live scripts and a task for adding plots to live scripts without writing any code. Simulink updates enable users to import C code as reusable Simulink libraries and to speed up simulations. The new Satellite Communications Toolbox in MATLAB can help equipment makers and operators model, simulate, analyze, and verify satellite communications systems and links. The Radar Toolbox includes algorithms and tools for the design, simulation, analysis, and testing of multifunction radar systems. The Simulink add-on, Data Distribution Service (DDS) Blockset, offers a full model-based design experience for system and algorithm engineers developing software for DDS-based embedded systems. According to the company, it can help users find errors sooner while performing faster design and coding iterations. **The MathWorks Inc**, 1 Apple Hill Dr, Natick, MA 01760-2098, www.mathworks.com



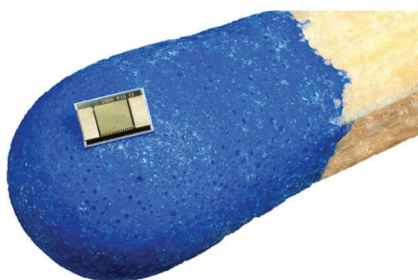
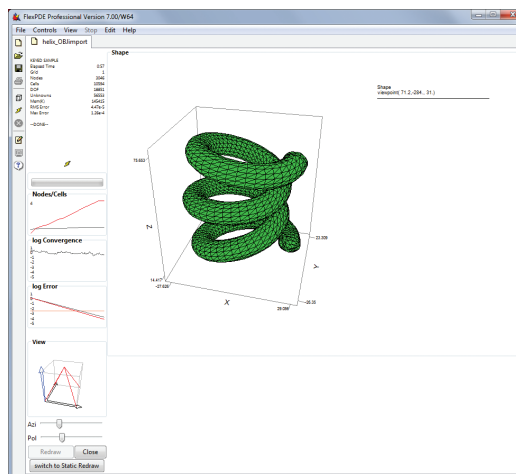
Basic power supply with linear accuracy

The R&S NGA100 series of basic power supplies from Rohde & Schwarz offer a performance level and extra functions not usually associated with that instrument class, according to the company. Four models provide a choice of single and dual outputs, with a maximum voltage per channel of 35 V at 6 A or 100 V at 2 A per output. Single-output models supply up to 40 W power, dual-output models up to 80 W. The dual-model outputs can be combined to provide up to 200 V or 12 A. A linear design throughout the output circuits improves performance compared with the switched-mode circuits often found in basic power supplies. The standard level of readback resolution, 1 mV or 100 μ A, is enhanced for currents under 200 mA to a resolution of 1 μ A. The R&S NGA100 has the necessary dynamic range for power and current spikes when switched to active mode. **Rohde & Schwarz GmbH & Co KG**, Muehlendorfstrasse 15, 81671 Munich, Germany, www.rohde-schwarz.com

NEW PRODUCTS

Software for partial differential equations

PDE Solutions has released version 7.18 of its FlexPDE finite element solution, an unlimited, scripted, multiphysics environment for partial differential equations. New features have been added and errors repaired. Version 7.18 increases the argument limit for function definitions from 3 to 10 and improves solver behavior for very small meshes and error estimation in quadratic models. The preconditioner selection algorithm and parser error location diagnostics are also improved. The Status legend window is no longer a floating frame. Occasional errors in the Find dialog box and in the XBOUNDARY, YBOUNDARY, and ZBOUNDARY functions have been corrected. Other miscellaneous problems, such as an error on Linux that causes sockets to remain open after the computer has connected to the internet, have also been addressed. **PDE Solutions Inc**, 9408 E Holman Rd, Spokane Valley, WA 99206, www.pdesolutions.com



Flexible miniature temperature sensor

With a footprint of less than $1.0\text{ mm} \times 0.6\text{ mm}$ and a low height of $50\text{ }\mu\text{m}$, the miniaturized temperature sensor from Heraeus Nexensos can be placed in extremely small spaces very close to heat sources. That minimizes thermal diffusion lengths and significantly speeds up temperature detection. The sensor can, for example, monitor temperature peaks between thermal interface material layers such as those in power electronics, microprocessors, and batteries. Its bendable structure enables close contact with curved and flexible surfaces, such as smart textiles or smart-linked medical applications and helps improve heat-transfer rates. A

high measuring accuracy of $\pm 0.1\text{ }^{\circ}\text{C}$ and the small thermal mass enable fast, precise sensing of temperature changes. **Heraeus Nexensos**, Reinhard-Heraeus-Ring 23, 63801 Kleinostheim, Germany, www.heraeus.com

PHYSICS TODAY

WEBINAR — **EDITOR'S SERIES**

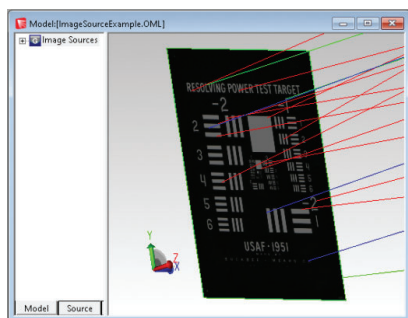
WHAT THE JUNO SPACECRAFT HAS TAUGHT US ABOUT JUPITER AND OUR SOLAR SYSTEM

WEDNESDAY, JUNE 23, 2021 – 11:00 A.M. EDT

Register Now | physicstoday.org/webinars

Data-sharing software

Tektronix says its TekDrive is the first native oscilloscope-to-cloud software solution to allow global data collaboration directly on an oscilloscope, PC, phone, or tablet. It eliminates the need for cumbersome data-sharing practices by allowing data to automatically become accessible, usable, and shareable across teams and partners, but it also incorporates robust security practices. And TekDrive is the first general-purpose test-and-measurement file system with scope-like data visualizations, according to the company. It provides smooth visualization and analysis capabilities that support any modern browser, including options to view, zoom, pan, measure, decode, and analyze full test-and-measurement data on any device with no need for additional software. **Tektronix Inc**, 14150 SW Karl Braun Dr, PO Box 500, Beaverton, OR 97077, www.tek.com



Optical design software

Lambda Research has unveiled TracePro 2021 version 21.2, the latest iteration of its software for the design and analysis of illumination and optical systems. The main improvement in TracePro 21.2 is the new Image Source, which enables TracePro users to employ image files as light sources. Image files can be inserted into a model, and rays are emitted from the image with flux and wavelength determined by the color and intensity of each pixel. The Image Source, which works with all ray tracing and analysis features, is especially useful for accurate image source modeling. The Interactive Optimizer has been further developed with user interface improvements and conveniences, and the Lighting Toolkit has been enhanced with the addition of Federal Motor Vehicle Safety Standards number 108 regulations to its built-in Regulation Table.

Lambda Research Corporation, 25 Porter Rd, Littleton, MA 01460, www.lambdaresearch.com

PT

Did you know
91% of *Physics Today*
readers find the magazine's
interdisciplinary content helpful
to their work/research

Reading
through others'
work can inspire
new directions in my
own work, even if it is
relatively unrelated
to my research.

Physics Today
exposes me to
ideas outside of my
specialty. It has led
to some interesting
applications of ideas
that have resulted in
new research.

Figures and quotes
obtained from a *Physics
Today* reader survey.

PHYSICS TODAY