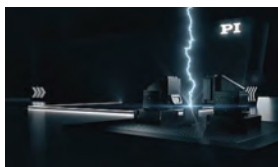


NEW PRODUCTS

Focus on software, data acquisition, 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



Automated photonic alignment

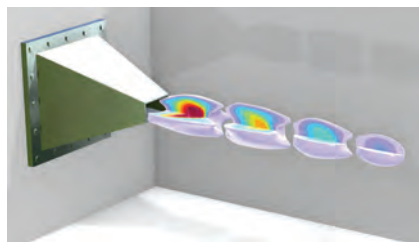
PI (Physik Instrumente) says that its new PILightning search-and-alignment algorithm represents a breakthrough in optimizing the alignment of optical components. Before that process can start, an optical signal, above the noise level,

must be registered in a procedure called first-light detection. PILightning, the newest functionality in PI's photonics-process-automation suite, is a first-light search method with an integrated artificial-intelligence-based real-time executive function. Replacing fine-pitch scanning with high-frequency data sampling, it significantly raises acquisition speeds. Tests have shown improvements of one order of magnitude and more in single-sided alignment applications; higher gains are achieved in double-sided first-light detection applications. PILightning has the potential to lower costs for test and assembly in industrial photonic-alignment applications, from wafer probing to final packaging.

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

Single- and multi-axis servo drives

Aerotech has introduced its XA4 and iXA4 PWM (pulse-width modulation) servo motor drives with options from one to four axes. The XA4 and iXA4 are part of the company's user-friendly Automation1 motion-control platform, which includes development software, controls, motor drives, and the fiber-optic HyperWire communication bus. The streamlined, economical single- and multi-axis panel-mounted servo drives include a full motion controller and input-output expansion options. They support multiple feedback-device types and include onboard memory for high-speed data capture and process control. The simplified dual-axis XA4 PWM servo drive communicates to Automation1 PC- and drive-based controller products over the HyperWire motion bus. The iXA4 PWM servo drive, which has a motion controller, eliminates the need for an industrial PC and reduces machine footprint. Users can control 12 HyperWire axes of motion and run up to nine tasks on the embedded Automation1 controller. **Aerotech Inc**, 101 Zeta Dr, Pittsburgh, PA 15238-2811, www.aerotech.com



Modeling and simulation software

Version 6.2 of Comsol's Multiphysics software for creating physics-based models and simulation applications is now available. It adds data-driven surrogate-model functionality for efficient standalone simulation apps. Surrogate models deliver accurate simulation results much faster than the full-fledged finite-element models that they approximate and are useful for digital twins, where fast and frequent updates of simulation results are often necessary. The AC/DC module now features high-performance multiphysics solvers for the analysis of electric motors, transformers,

and other electric machinery. Version 6.2 speeds up computations, providing up to 40% faster turbulent computational-fluid-dynamics simulations. A boundary element analysis for acoustics and electromagnetics can now be performed up to seven times faster. In addition to providing new modeling features, the updated software expands and enhances add-on products and improves core offerings, such as visualization and meshing. **Comsol Inc**, 100 District Ave, Burlington, MA 01803, www.comsol.com



Ultrafast multichannel data acquisition

Star-Hub, a new option from Spectrum Instrumentation, offers a user-friendly way to create multichannel-data-acquisition systems with ultrafast sampling speeds of up to 10 GS/s. Star-Hub allows up to eight of the company's Peripheral Component Interconnect Express digitizers from its M5i.33xx series to be connected. Individual cards then share common clock and trigger signals, which ensures minimal phase delay and timing skew between all the channels. The Star-Hub option is installed by mounting a single piggyback module onto any of the M5i series cards in the multichannel system. Using accurately matched and shielded coax cabling, the board distributes the clock to each module and precisely synchronizes the trigger event with the system clock. Data-acquisition systems can be built with 2–16 channels at sampling rates of up to 5 GS/s or 2–8 channels at the maximum sampling rate of 10 GS/s. They can be used in a wide variety of applications, including scientific experimentation, communications, automated testing, and aerospace. **Spectrum Instrumentation Corp**, 401 Hackensack Ave, 4th Fl, Hackensack, NJ 07601, <https://spectrum-instrumentation.com>



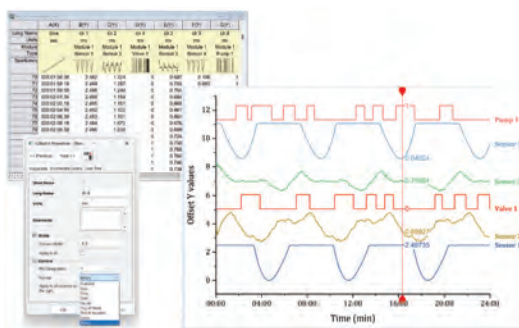
Thermal power sensor

Rohde & Schwarz has launched its R&S NRP170TWG(N) thermal power sensor for precise power-level measurements in the D band. According to the company, it is the only RF power sensor on the market that offers full traceability to national metrology institutes in the frequency range of 110–170 GHz. The sensors are suitable for general R&D for 6G mobile communications, novel subterahertz communications, sensing, and future automotive radar applications. They are fully calibrated for long-term stability and can compensate for environmental temperature influences within the specified operating range of 0 °C to +50 °C. They offer a dynamic range of –35 dBm to +20 dBm and up to 500 measurements/s. For ease of use, the sensors provide stable power readouts even at levels below –20 dBm, have no drift, and are resilient to external temperature changes and out-of-band signals such as the ones in far-IR. The devices can be easily integrated into any measurement setup with a USB or LAN connection. **Rohde & Schwarz GmbH & Co KG**, Mühldorfstraße 15, 81671 Munich, Germany, www.rohde-schwarz.com

vide stable power readouts even at levels below –20 dBm, have no drift, and are resilient to external temperature changes and out-of-band signals such as the ones in far-IR. The devices can be easily integrated into any measurement setup with a USB or LAN connection. **Rohde & Schwarz GmbH & Co KG**, Mühldorfstraße 15, 81671 Munich, Germany, www.rohde-schwarz.com

Data analysis and graphing software

OriginLab has released Version 2024 of its Origin and OriginPro data analysis and graphing software. New features include support for dark mode, which can be set for Origin independent of Windows dark mode. Multiple built-in dark color themes and dynamic color-reversal levels for graphs in dark mode are offered, and the background color of graph pages can be customized. This version adds new ways of interactively adjusting axis scales on graphs: Users can either click on an axis and drag the axis ends or press the Z/X keys and drag layer boundaries. The sheet-based browser plot now allows for easy visualization of data across multiple worksheets in a project. A new binary-column type has been introduced for test and measurement data in graphs. New graph types—Tile Grid Map Plot and Split HeatmapPlot—have been added, and the Design of Experiments app has been updated. New apps include Statistical Process Control, Power Spectral Density, Youden Plot, and Poisson Regression. **OriginLab Corporation**, One Roundhouse Plaza, Ste 303, Northampton, MA 01060, www.originlab.com



error measure, parameter or equation summaries in debug files, and diagnostics for discontinuous Jacobians interfering with Newton convergence. **PDE Solutions Inc**, 9408 E Holman Rd, Spokane Valley, WA 99206, www.pdesolutions.com

Software for partial differential equations

New features have been added and internal improvements made in version 8 of the PDE Solutions FlexPDE multiphysics finite-element solution environment for partial differential equations. The software now offers support for OpenGL graphics, with new selectors for mesh, contour, and surface plots. Automatic reconnection for moving meshes is offered. Models that produce complex eigenvalue solutions can now be solved. Any plot can be exported in Scalable Vector Graphics format, and Periodic Map now allows variable exchange, which is helpful for exchanging vector components. A new edge distance function lets users calculate the distance along a named path. New utility functions and additional hyperbolic functions have been added and improvements made to the Transfer file format,

error measure, parameter or equation summaries in debug files, and diagnostics for discontinuous Jacobians interfering with Newton convergence. **PDE Solutions Inc**, 9408 E Holman Rd, Spokane Valley, WA 99206, www.pdesolutions.com

High-bandwidth oscilloscope probes

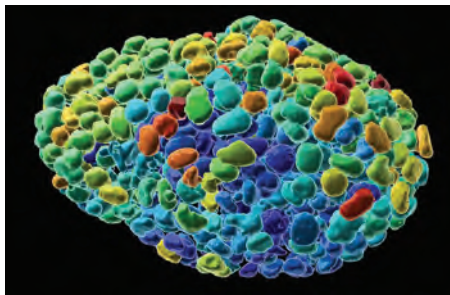
According to Keysight, its InfiniiMax 4 series high-bandwidth oscilloscope probes are the only available probing solution with a high-impedance probe head operating at more than 50 GHz. Since it delivers bandwidths with filters up to 52 GHz Brickwall and 40 GHz Bessel–Thomson, the new instrument can perform system verification without loading the device under test. By maintaining accuracy and minimizing interference, it can accelerate design, validation, and testing in high-speed digital, semiconductor, and wafer applications. The InfiniiMax 4 series offers an innovative RCRC (double resistance–capacitance) design with a flexible PCA (probe card analyzer) head that uses its natural flexibility to take the strain off the delicate tip wires. The modular design features an amplifier with multiple access points. It bypasses the need for custom evaluation boards or interposers and enables users to debug designs faster. The InfiniiMax 4 probes are compatible with Keysight’s real-time UXR-B Series oscilloscopes and the InfiniiMax III probe head. **Keysight Technologies**, 1400 Fountaingrove Pkwy, Santa Rosa, CA 95403-1738, www.keysight.com



NEW PRODUCTS

Beryllium-window monoblock x-ray source

Spellman has unveiled its XRBe80PN300 beryllium-window monoblock x-ray source. Designed for OEM applications and running at 300 W, the integrated monoblock x-ray source powers the internal bipolar x-ray tube to 80 kV. It is available with a cone-shaped beam geometry. Proprietary emission-control circuitry provides excellent regulation of the x-ray tube current and high performance. Features such as a universal voltage input, power-factor corrected; a compact size and light weight; the ability to be mounted in any physical orientation; and a standard RS-232 digital interface simplify integration of the XRBe80PN300 into x-ray systems. Applications include nondestructive testing, thickness and plating measurement, food inspection, fill-level confirmation, and security scanning systems. *Spellman High Voltage Electronics Corp*, 475 Wireless Blvd, Hauppauge, NY 11788, www.spellmanhve.com



Microscopy-image-analysis software

Oxford Instruments Andor has announced the latest version of its artificial-intelligence microscopy-image-analysis software, Imaris 10.1. AI-segmentation tools have been integrated into the main image-analysis workflows, improving ease of use and providing better, more versatile segmentation for users in life sciences applications. A native, trainable AI pixel classifier is an integral part of the Imaris 10.1 big-data-capable Surface segmentation model. It simplifies and improves segmentation and object detection in challenging fluorescent data sets and paves the way for 3D scanning electron microscopy segmentation and shape recognition. Researchers of all experience levels can use the AI pixel classifier. They

can train and compute the results with the classifier on their local machine by painting the data with the efficient smart-brush tool. Training and the results preview are fast and interactive. The pixel classifier can be trained and utilized on 2D, 3D multi-channel, and time-lapse data sets and used in a batch mode to analyze more samples of a similar type. *Andor Technology Ltd*, 7 Millennium Way, Springvale Business Park, Belfast BT12 7AL, UK, <https://andor.oxinst.com>

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