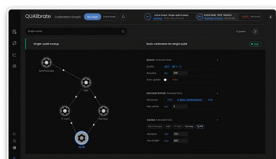


NEW PRODUCTS

Focus on test, measurement, quantum metrology, spectroscopy, and spectrometry

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

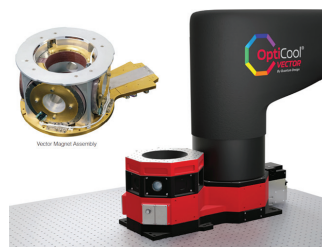


Quantum computer calibration framework

According to Quantum Machines, its QALibrate framework can shorten quantum computer calibration time from hours to minutes. By transforming the process from a collection of isolated scripts into a modular, collaborative system, QALibrate enables researchers and quantum engineers to create reusable calibration components, combine them into complex workflows, and execute calibrations through an intuitive interface. It abstracts away hardware complexities and lets teams focus on quantum system logic rather than low-level details. QALibrate's open-source access and modular architecture allow newly developed calibration protocols to be immediately shared, validated, and built upon by the broader quantum computing community. On top of QALibrate, companies can also develop proprietary solutions that leverage advanced approaches such as quantum system simulation and deep-learning algorithms. Along with the framework, Quantum Machines is releasing its first calibration graph for superconducting quantum computers. **Quantum Machines**, HaMasger St 35, Tel Aviv-Yafo, 6721407, Israel, www.quantum-machines.co

Magneto-optical cryostat

Quantum Design has unveiled the OptiCool Vector, a 4-1-1 vector magnet version of its OptiCool magneto-optical cryostat. The OptiCool platform is designed for investigating materials and various technologies at very low temperatures and high magnetic fields, in applications including quantum optics, spintronics, and magnetic thin films. While the standard OptiCool features a 7 T split-conical magnet with the field perpendicular to the table, the OptiCool Vector provides a magnetic field of up to ± 4 T in the plane perpendicular to and ± 1 T in the plane parallel to the optical table. The four side windows in the x - and y -axes of the magnet allow for transmission and reflection experiments in the plane parallel to the table. The top and optional bottom windows in the z -direction allow for reflection or transmission experiments perpendicular to the optical table. The magnet power supplies in the OptiCool Vector let users precisely set the magnetic field direction relative to their sample and optical systems. **Quantum Design**, 10307 Pacific Center Ct, San Diego, CA 92121, www.qdusa.com



Single-shot autocorrelator

APE's portfolio of autocorrelators now includes the pulseCheck Single model, which delivers single-shot measurements of ultrashort, low-repetition-rate laser amplifiers. It can also measure high-repetition-rate lasers. According to the company, the single-shot operation and fast refresh rate let users record pulse-duration changes as fast as possible, generating real-time feedback for laser optimization. The pulseCheck Single is suitable for fine-tuning ultrafast lasers, particularly during the making of adjustments such as grating alignments or compressor tweaks.

The built-in camera system can simultaneously capture the pulse duration and spatial properties of the laser beam in one direction. The software provides a wide range of parameters and statistics. In one glance, users can track the autocorrelation trace, beam properties, pulse duration along the beam profile, beam pointing, energy stability, and more. Alignment is simple, and the compact size and minimal hardware requirements make the pulseCheck Single easy to integrate. Laser polarization can be adjusted easily by flipping the device. **APE GmbH**, Plauener Strasse 163–165, Haus N, 13053 Berlin, Germany, www.ape-berlin.de

Sampling oscilloscopes



Keysight Technologies has developed the single optical channel DCA-M and dual optical channel DCA-M sampling oscilloscopes. The digital communication analyzers (DCAs) are designed to optimize measurement sensitivity and test efficiency in 1.6-terabit transceiver optical testing for R&D and manufacturing of next-generation optical interconnects in data centers and AI clusters. The oscilloscopes provide high-speed optical signal analysis at up to 240 gigabits/second per lane. Wide precise bandwidth, less than 15 μ W optical channel noise, and less than 90 fs of intrinsic time-based jitter preserve the critical measurement margin at the very high data rates and challenging signal conditions of 1.6-terabit transceivers. To minimize test-system complexity and ensure standards compliance, integrated clock recovery supports baud rates of up to 120 gigabauds and therefore enables the DCA-M to recover the clock at the full data rate, as prescribed by the standards. **Keysight Technologies Inc**, 1400 Fountaingrove Pkwy, Santa Rosa, CA 95403-1738, www.keysight.com



WDXRF spectrometer

Bruker has launched its S8 Tiger Series 3 high-power WDXRF (wavelength dispersive x-ray fluorescence) spectrometer for elemental analysis in research and industry. The spectrometer supports materials research applications with detection limits below 1 ppm and industrial-process and quality-control applications with high uptime requirements. Various detector options optimize the spectrometer's performance in analysis speed and data quality. For example, SensorBoost technology increases the signal-processing speed by a factor of two for light elements and enhances sample throughput for cement, industrial minerals, and ceramics applications. Bruker's proprietary solid-state detector, HighSense XE, improves process control in metals, geology, and mining, for order-of-magnitude higher

count rates than conventional detectors, the company says. The single-element channels for specific elements, such as boron in glass, and the HighSense XP multi-element channel for groups of elements have a sample throughput more than 30% higher than purely sequential spectrometers'. The new EasyLoad sample magazine with its integrated camera AI autonomously handles different kinds of liquid and solid samples. **Bruker AXS**, Östliche Rheinbrückenstr 49, 76187 Karlsruhe, Germany, www.bruker.com

New literature: Ebook on low-level measurement techniques

Lake Shore Cryotronics has published an ebook titled *New Low-Level Measurement Techniques for Device Characterization*. The ebook examines an approach to instruments for low-level measurement setups that use the company's MeasureReady M81-SSM synchronous source measure system. It describes how the modular multichannel system simplifies measurements by requiring fewer instruments: It combines the capabilities of DC picoammeters, DC voltmeters, and AC lock-in amplifiers in an all-in-one configuration. The ebook explains how fewer cables and faster setup between sources, measures, and sample connections minimize leakage, injected noise, wiring resistance, and other undesirable effects and optimize signal sensitivity and precision. The number of source and measure channels can be increased to allow for synchronized or parallel sample and device testing. They ensure tight sampling and channel synchronization. The ebook explores how the system's lock-in and differential (balanced) source and measure technologies remove noise from measurements, particularly in low-temperature applications. It also describes how finite impulse-response filtering can speed up lock-in measurements.

Lake Shore Cryotronics Inc, 575 McCorkle Blvd, Westerville, OH 43082, www.lakeshore.com



Signal and spectrum analyzer

Designed to facilitate new measurement scenarios in RF system testing, the FSWX signal and spectrum analyzer from Rohde & Schwarz addresses the growing demand for higher data rates, wider modulation bandwidths, and increased modulation orders in wireless, satellite, and mobile communications applications. The multichannel signal and spectrum analyzer integrates multiple input ports with an internal multipath architecture that enables a novel cross-correlation feature and advanced triggering

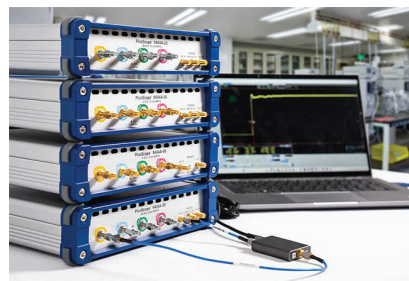
options. With its low phase noise for high signal purity, spurious-free dynamic range, and precise error-vector-magnitude analysis capability, the FSWX delivers a better RF performance than other available signal and spectrum analyzers, according to the company. The instrument features high measurement speed, advanced filter banks, broadband A/D converters, and analysis tools tailored to users' needs. An 8 GHz wide internal bandwidth allows for comprehensive analysis of complex waveforms and modulation schemes. **Rohde & Schwarz GmbH & Co KG**, Mühlendorfstr 15, 81671 Munich, Germany, www.rohde-schwarz.com

High-bandwidth sampling oscilloscopes

Pico Technology has extended its PicoScope 9400A series of high-bandwidth sampling oscilloscopes. Built on Pico's SXRT0 (sampler-extended real-time oscilloscope) technology, the series now includes three new models: 6-, 16-, and 33-GHz-bandwidth versions are now available in addition to the previously announced 25 GHz one. Designed for accuracy and performance, the 33 GHz model achieves rise and fall times of under 12 ps, enabling precise analysis of ultrafast signals. All the oscilloscopes feature four channels with 12-bit voltage resolution and jitter specification of less than 1.5 ps rms, a feature that is critical for time-domain precision in advanced research environments.

An optional clock-recovery function can generate a trigger from a received data signal where a separate trigger signal is not readily available. The oscilloscopes are suitable for use in semiconductor and materials research, high-speed electronics and communications, and high-energy physics, in all of which accurate waveform capture and signal integrity analysis are critical. The compact, PC-connected design facilitates easy integration into automated test setups or shared laboratory environments.

Pico Technology, 320 N Glenwood Blvd, Tyler, TX 75702, www.picotech.com



PT