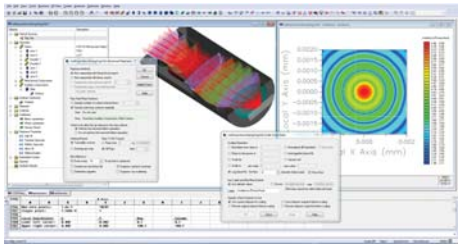
NEW PRODUCTS

Focus on software 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 the product description. For all new products submissions, please send to Rnanna@aip.org.

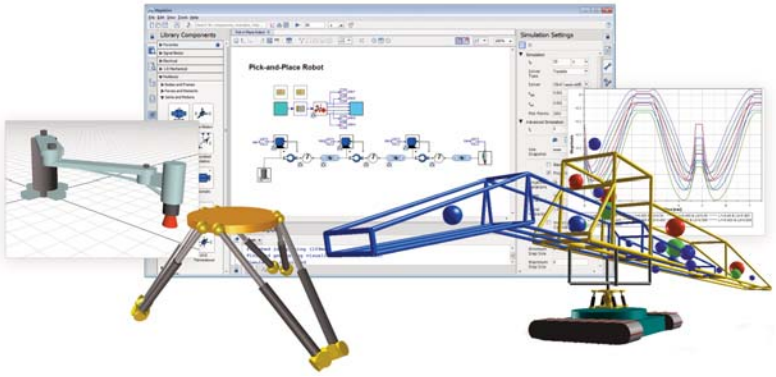
Andreas Mandelis



Optical systems software

The latest version of Photon Engineering's FRED software for virtual prototyping of optical systems, FRED 16.41, includes features designed to make the software more usable, diverse, and efficient. It uses ray tracing, a technique that has been improved in the new release, to simulate the propagation of light through optomechanical systems. For example, the Optimum version of FRED will now use up to 63 threads for multithreaded ray tracing and analyses; the software can now ray trace up to 2^{63} rays. The ray buffer preference settings have been modified so that the 64-bit version of FRED can store up to 10^9 rays in RAM at a single time. Improvements have also been made to model loading and updating, diffraction efficiency specification, and geometry editing, and a new volume hologram efficiency feature has been added. Applications for FRED include illumination and imaging and nonimaging optics, imaging and multiwavelength systems, and stray-light and laser studies. ***Photon Engineering LLC**, 310 S Williams Blvd, #222, Tucson, AZ 85711, http://photonengr.com*

Modeling and simulation software



A new version of MapleSim, Maplesoft's modeling and simulation software platform, provides tools to increase productivity and enhance cross-tool compatibility. MapleSim 2016.2 features live simulations that let users see results as the simulation is running, so they can track progress and immediately investigate unexpected outcomes. A 3D overlay for comparing simulation visualizations shows changes in the behavior of the model under different conditions. Revision-control tools allow multiple users to work on the same model. In addition to exporting models to the internationally recognized Functional Mock-up Interface standard, MapleSim now supports direct import of models created in other FMI-compatible software, such as LMS Imagine.Lab Amesim, for model exchange and co-simulation. Users can work with MapleSim modeling and analysis tools on models developed with other software. ***Maplesoft**, 615 Kumpf Dr, Waterloo, ON N2V 1K8, Canada, www.maplesoft.com*

Fast multiwavelength meter

The 438 series multiwavelength meter from Bristol Instruments can measure the wavelength, power, and signal-to-noise ratio (SNR) of as many as 1000 discrete optical signals. According to the company, it is the fastest multiwavelength meter available. It features high accuracy and straightforward operation and has a rugged design. Its precise, reliable, and efficient wavelength-division multiplexing testing can meet the needs of demanding applications. The meter combines Michelson interferometer-based technology with FFT analysis. Wavelength is measured to an accuracy as high as ±0.3 pm and power to an accuracy of ±0.5 dB; optical SNR is automatically calculated to greater than 40 dB. A measurement rate of 10 Hz enables a reduction in wavelength testing times, and a broad operational wavelength range of 1000–1680 nm covers all optical communications bands. ***Bristol Instruments Inc**, 50 Victor Heights Pkwy, Victor, NY 14564, www.bristol-inst.com*

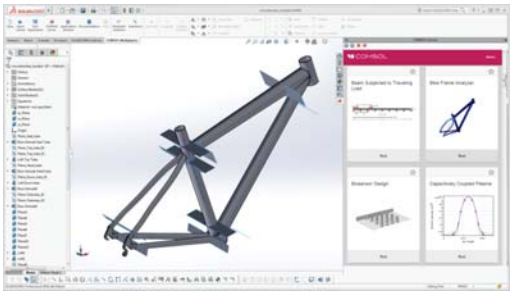
High-resistivity measurement software

Tektronix has developed software to help users perform high-resistivity measurements to verify the electrical properties of insulating and other materials they are developing or evaluating. The KickstartFL-HRMA application allows for materials characterization by means of setups and methods consistent with ASTM D257 and IEC 60093 standards. Designed to control the Keithley model 6517B electrometer and model 8009 resistivity chamber, the software automates bulk and surface resistivity measurements for fast, accurate, repeatable results without custom programming. Users can visualize the step response of the material and decide on an appropriate time interval for testing. KickstartFL-HRMA uses the Keithley alternating polarity measurement technique to eliminate inherent background currents. Optional probes allow for observation of resistivity changes that result from environmental factors such as temperature and humidity. ***Tektronix Inc**, 14150 SW Karl Braun Dr, PO Box 500, Beaverton, OR 97077, www.tek.com*

Magneto-transport measurement system

Attocube Systems and Specs Surface Nano Analysis have collaborated in the field of quantum transport measurement at low temperatures. To allow for the exploration of a very large phase space at cryogenic temperatures and high magnetic fields, they have designed a system that combines the attoDRY2100 dry magnet cryostat, the atto3DR 3D sample rotator, and the measurement electronics of Specs' Nanonis Tramea. Optimized for quantum transport measurements, Tramea is a compact and ultrafast multichannel data acquisition system with low noise and high precision. It offers complete software control and easy handling. The software integrates the attoDRY2100's automatic control of temperature—from 1.5 K to 300 K—and magnetic field of 9 T or more and the atto3DR's arbitrary orientation between sample surface and magnetic field direction, as defined by the atto3DR. According to the companies, the combination of advanced instrumentation and software can provide fast results with reliable, repeatable, state-of-the-art specifications. ***Attocube Systems Inc**, 139 Fulton St, Ste 704, New York, NY 10038, www.attocube.com*

Software for CAD synchronization



Comsol has updated the add-on to its Multiphysics software, LiveLink for SolidWorks, which allows users to link SolidWorks geometries with Multiphysics simulations. Specialists can now build simulation apps that integrate with computer-aided design (CAD) to let users analyze and modify a geometry from SolidWorks software. They can launch, browse, and run apps from within the SolidWorks interface. A bike-frame analyzer app added to the application libraries demonstrates the new capabilities. It leverages LiveLink to interactively update the geometry while computing the stress distribution in the frame. Users can test frame configurations for parameters such as structural dimensions, materials, loads, and constraints; the app computes the stress distribution and the deformation of the frame. ***Comsol Inc**, 100 District Ave, Burlington, MA 01803, www.comsol.com*

PXIe instruments for waveform tuning

Keysight Technologies has announced both an arbitrary waveform generator (AWG) with three highly synchronized channels for precise tuning of I/Q waveforms (I/Q denotes in-phase/quadrature) and envelope tracking and a PXI oscilloscope that the company claims is the first full-featured one on the market. Suitable for creating digitally modulated waveforms for wideband communication systems and high-resolution waveforms for radar and satellite tests, the M9336A PXIe AWG includes multiple independent or synchronized signal outputs. Built with Keysight's InfiniiVision technology, the M9243A PXIe modular oscilloscope provides up to 1 GHz bandwidth for quick analysis and troubleshooting of wideband signals. With an update rate of 1 000 000 waveforms/s and advanced probing technology, the oscilloscope enables troubleshooting of random and intermittent signals not easily seen with digitizer technology. ***Keysight Technologies Inc**, 1400 Fountaingrove Pkwy, Santa Rosa, CA 95403-1738, www.keysight.com*

New from Amptek

PMT Digital Tube Base

Use with *Your* Scintillator or Photomultiplier Tube

Includes

- Digital pulse processor with charge sensitive preamplifier, and MCA
- All power supplies (low voltage and high voltage)
- Interface hardware and PC software
- 14 pin photomultiplier tube base

Features

- Compatible with standard scintillation spectrometers
- USB or Ethernet (10T-PoE) for control and power
- Flexible architecture for tailoring interfaces
- For OEMs and custom users
- Includes pulse height acquisition, MCS, SCA, and List Modes. Supports pulse shape discrimination.
- Optional gamma-ray spectrum analysis software and software development kit with examples

OEM's #1 Choice

AMP TEK® **AMPTEK Inc.**
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Universal benchtop digital controllers

The CS8DPT Platinum series universal benchtop digital controller from Omega Engineering is suitable for laboratory and other applications that require portable temperature, process, and strain measurement and control. Simple to configure and use, it features a universal input that reads most temperature, process, and bridge-type inputs and has dual LED displays. The instrument handles 10 common types of thermocouples, multiple resistance temperature detectors, thermistors, various process (DC) voltage and current ranges, and strain inputs. It comes standard with a USB port. With optional serial and Ethernet connectivity, the controller can serve webpages over an Ethernet local area network or the internet. Users can monitor and control a process remotely through a Web browser without special software or a computer and receive messages from the controller on an internet-enabled pager or cell phone. ***Omega Engineering Inc**, 800 Connecticut Ave, Ste 5N01, Norwalk, CT 06854, www.omega.com*

charge preamplifiers

detect femtoJoule light pulses and shaping amplifiers

all product specifications can be found online at:

http://cremat.com

Cremat's low noise charge sensitive preamplifiers (CSPs) can be used to read out **pulse** signals from **p-i-n photodiodes**, **avalanche photodiodes** (APDs), **SiPM photodiodes**, semiconductor radiation detectors (e.g. Si, CdTe, CZT), ionization chambers, proportional counters, surface barrier/PIPS detectors and **PMTs**.

When used with shaping amplifiers, you can detect visible light pulses of a couple femto-joules using common p-i-n photodiodes. Our amplifiers are small plug-in modules, but we also sell evaluation boards for them.

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Data analysis and graphing software

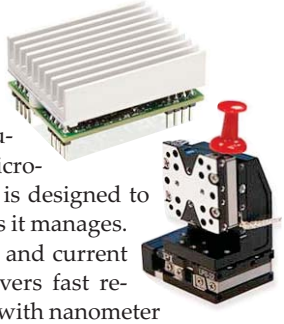
OriginLab has added more than 100 new features, improvements, and apps to the latest version of its data analysis and graphing software, Origin and OriginPro 2017. Ease-of-use enhancements include a revamped plot menu with large icons to help users quickly find the graph type they need, simpler column and cell notation for defining column formulas, and the Origin central startup dialog. It provides graph and analysis samples, easy access to existing templates and projects, resources to explore and install apps, and videos and tutorials. Among the 14 new apps for extending graphing and analysis features are principal component analysis for spectroscopy, enzyme kinetics, and an updated LaTeX. Other additions to Origin 2017 include two-way variance analysis for mean value plots, built-in formulas and metadata for parameter initialization, and support for the full Numerical Algorithms Group Mark 25 library. ***OriginLab Corporation**, One Roundhouse Plaza, Ste 303, Northampton, MA 01060, www.originlab.com*

Software for PXI RF test systems

National Instruments has announced the latest version of its measurement software for PXI RF test systems. NI-RFmx 2.2 can be used with the second-generation PXI vector signal transceiver (VST) to test 4.5 G and 5 G RF components such as transceivers and amplifiers by means of a wide range of carrier aggregation schemes. With the VST, users can simultaneously generate and measure up to 32 LTE carriers, each with 20 MHz of bandwidth, and run the software to specify various carrier-spacing schemes. The new release features algorithm improvements that reduce measurement time. For example, users performing modulation quality and spectral measurements for wireless technologies can reduce by 33% the time it takes to assess error vector magnitude. The NI-RFmx provides improved support for measurements such as intermodulation distortion, third-order intercept, and both Y-factor and cold-source noise figure. ***National Instruments**, 11500 N Mopac Expy, Austin, TX 78759-3504, www.ni.com*

Stepper motor controllers

MDC Vacuum Products now offers 4.3-inch touch-screen controllers for precision motion applications. They are compatible with all standard stepper motor options for rotary, linear, and XYZ stages. The controller package includes everything needed to drive an MDC motorized feedthrough. For simple installation, all cables and connections are pre-terminated to work together. Controllers are available in single- or three-axis versions. They can be programmed to deliver output commands directly to the motor or can be connected to a computer via RS-485 with options for RS-232, USB, Ethernet, and DeviceNet connections. The computer interface is controlled via ASCII command set software. The controllers feature up to 256× software-selectable microstepping, 10 user-selectable set points with dedicated acceleration and speed profiles, and dynamic torque control when used with MDC-compatible motors. ***MDC Vacuum Products LLC**, 30962 Santana St, Hayward, CA 94544, www.mdcvacuum.com*



Miniature positioning systems driver

Physik Instrumente has introduced an economic OEM driver for miniaturized piezo inertia positioning stages. Applications include precision optomechanical alignment, biomedical instrumentation, photonics alignment automation, microscopy, and micromanipulation. The versatile model E-872 stick-slip motor driver is designed to complement the size of the ultracompact inertia motor positioners it manages. Control is simple with step and direction input via TTL signals, and current consumption is low. The high 20 kHz full step frequency delivers fast response. A version with 256 microsteps allows for smooth motion with nanometer resolution. ***Physik Instrumente LP**, 16 Albert St, Auburn, MA 01501, www.pi-usa.us*