

new products

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.

Lawrence G. Rubin

Focus on magnetism and electromagnetism

Design of electromagnetic devices

Ansoft Corp has announced Maxwell v12 and RMXprt v12 software for the design of 2D and 3D motors, actuators, transformers, and other electric and electromechanical devices. Maxwell v12 includes a new 3D electric transient program that solves time-varying electric fields resulting from a transient disturbance, such as lightning strikes on electrical equipment, and possesses advanced model healing capabilities. Next-generation desktop architecture has been added to the Maxwell 2D solvers, offering new usability enhancements, including a powerful scripting capability and improved post-processing. RMXprt v12 has been upgraded to solve three-phase nonsalient synchronous machines and offers a new wire library enabling motor designers to study the effects of various wire types prior to physical prototype creation. *Ansoft Corporation, 225 West Station Square Drive, Suite 200, Pittsburgh, PA 15219, <http://www.ansoft.com>*
See www.pt.ims.ca/16304-131

RF low-noise amplifier

Infineon Technologies has developed the BGA728L7, a low-noise broadband amplifier optimized for the frequency range covering VHFIII, UHF, and L bands. The instrument, for portable and mobile TV applications, supports 1.8-V, 2.8-V, and 3.3-V operations and offers dual-gain modes. At high gain,

the BGA728L7 helps to improve reception sensitivity for weak signals; for a strong input signal, the amplifier can be switched to a low-gain mode that provides higher linearity with a low current consumption. Mobile TV is a key feature for next-generation, high-end communication products such as cellular phones, personal media players, and portable devices, including laptops. Successful mobile TV systems must achieve a high dynamic range and enhance sensitivity for indoor reception or tunnels. *Infineon Technologies AG, Am Campeon 1-12, 85579 Neubiberg, Germany, <http://www.infineon.com>*
See www.pt.ims.ca/16304-132

Data acquisition system for magnetometers

Bartington Instruments has introduced the DAS1 magnetic range data acquisition system that is able to monitor large arrays of sensors, in particular the company's recently introduced Mag-03RC three-axis marine magnetometer. That capability makes it ideal for applications such as magnetic signature ranges. The



system combines analog conditioning electronics with 18-bit A/D conversion and data processing in a modular design that allows input channels to be added in steps of 30, up to a maximum of 210 (equivalent to 70 three-axis sensors). Digital sample rates vary with the number of channels used, but a fully populated system can sample at up to 15.6 kHz. The DAS1 is also suitable for other sensor types, including depth, vibration, and acoustic. *Bartington Instruments Ltd, distributed by GMW Associates Inc, 955 Industrial Road, San Carlos, CA 94070, <http://www.gmw.com>*
See www.pt.ims.ca/16304-133

Brushless DC motors

A series of flat brushless motors from maxon motor now have built-in speed

controllers with little increase in the motors' size. The EC 20 flat, EC 32 flat, and EC 45 flat motors cover an operating range of 2–50 W. The devices are known as external rotor motors, in which the rotating rotor shell encloses the fixed stator. Current commutation is integrated in the motors through Hall sensors, a one-quadrant speed controller, and numerous protection functions. The motors are available as two- and five-wire versions. In the two-wire model, speed acts proportionately to the applied operating voltage of 10–28 V; the five-wire version offers additional functionality, including set value input, enable, and speed monitor, and a wider operating range. Current limitation and temperature monitoring are standard in all models. *maxon motor ag, Brünnigstrasse 220, Postfach 263, CH-6072 Sachseln, Switzerland, <http://www.maxonmotor.com>*
See www.pt.ims.ca/16304-134

Planar 3D electromagnetic simulator

Agilent Technologies is offering the update 1 release of its Advanced Design System (ADS) 2008 electronic design automation software platform. The new version enables a $10 \times$ speedup in planar 3D electromagnetic simulation and nonlinear circuit simulation and allows accurate signal integrity simulation with measured S-parameter data of high-speed interconnects. Update 1 also provides new simulation models and a further improvement to the graphical user interface. The speed improvement helps RF integrated circuit and RF module designers take advantage of EM simulation for EM problem solving. The company's ADS is useful for designers of electronic products such as mobile phones, wireless networking, GPS, radar and satellite communications systems, and high-speed digital serial links. *Agilent Technologies Inc, 5301 Stevens Creek Boulevard, Santa Clara, CA 95051, <http://www.agilent.com>*
See www.pt.ims.ca/16304-135

CW/pulsed NMR teaching tool

TeachSpin has released the PS2-A CW/pulsed nuclear magnetic resonance spectrometer, a single-coil, matched sample unit. The new instrument can observe NMR signals from both hydrogen (proton) and fluorine; fluorine nuclei are par-



ticularly interesting because they typically exhibit large chemical shifts in various compounds. Some of those shifts can even be seen in proton compounds. The PS2-A has a larger and more homogeneous magnetic field than an earlier version of the instrument; the proton resonant frequency is 21 MHz and the T_2^* is 10 ms. The unit incorporates four independently controlled gradient field coils, each of which has its own current-regulated power supply. Because of the spectrometer's improved stability, students can take advantage of data from the two-channel quadrature RF phase-sensitive detectors. *TeachSpin Inc, Tri-Main Center, Suite 409, 2495 Main Street, Buffalo, NY 14214, <http://www.teachspin.com>*
See www.pt.ims.ca/16304-136

Hall effect current sensors

Allegro MicroSystems has announced

the ACS756 family of linear, low-noise, open-loop current sensors with a 125-kHz bandwidth capability. The device is ideal for 50- to 100-A applications and has a low-resistance ($130\text{-}\mu\Omega$) current conductor and 3-kV RMS voltage isolation. The unit incorporates a precision, low-offset linear Hall sensor circuit with a copper-conducting path located near the die. The thickness of the conductor allows survival of the device at up to $5\times$ overcurrent conditions. Sensor accuracy is optimized through the close proximity of the magnetic signal—produced by the applied current—to the Hall transducer. Each ACS756 sensor has a total output error of 0.8% at 25 °C, 20 or 40 mV/A output sensitivity (AC or DC), 3- μ s output rise time in response to a step input current, and 3.0- to 5.0-V single-supply operation. *Allegro MicroSystems Inc, 115 Northeast Cutoff, Worcester, MA 01606, <http://www.allegromicro.com>*
See www.pt.ims.ca/16304-137

Field monitor software

Version 3 of AR RF/Microwave Instrumentation's VM7000 virtual field mon-

itor software simultaneously controls and operates any combination of the company's laser and battery-powered field probe series FL7000, PL7000, FP7000, and FH7000. The new software allows control of as many as 16 probes through various ports using one port per probe. It provides a graphical user interface for control and displays probe data and status. Users can change sample rates and axes of all enabled probes and automatic setup for any of the AR probes. They can also select any of the following display configurations: xyz, minimum/maximum average and hold, and graphical. All the features of the AR FM7004 field monitor's frequency correction have been duplicated in version 3 to allow for internally applied correction factors to field probe readings. *AR RF/Microwave Instrumentation, 160 School House Road, Souderton, PA 18964-9990, <http://www.ar-worldwide.com>*
See www.pt.ims.ca/16304-138

MRI-compatible rotary encoder

Micronor has developed the EC-TD5207, a nonmetallic, fiber-optic rotary encoder that operates in extreme electromagnetic

MAGNETS

NEODYMIUM IRON BORON • SAMARIUM COBALT
CERAMIC • ALNICO
MAGNETIC ASSEMBLIES • COMPLETE DESIGN FACILITIES



With a state of the art manufacturing facility which is certified to **SAE AS 9100B** and **ISO 9001:2000** we can deliver a quality magnet, assembly or subassembly **fast**. MCE can also fully engineer and design a solution for your magnet requirement. Call, fax or visit our web site www.mceproducts.com for an **immediate** quotation.



MAGNETIC COMPONENT ENGINEERING, INC.

2830 Lomita Blvd. • Torrance, CA 90505
Toll Free: 800-989-5656 • Main: 310-784-3100 • Fax: 310-784-3192

E-mail: mcesales@mceproducts.com Website: www.mceproducts.com

See www.pt.ims.ca/16304-30

High & Ultra-High Components for Vacuum Science & Technology



**Thousand of components
in-stock & ready to ship today!**
Access over 3300 parts online at
mdcvacuum.com & insulatorseal.com

Call or visit us online for a FREE CATALOG 1-800-443-8817

See www.pt.ims.ca/16304-31

AVS Show—Booth #501



Piezo-stage controller

Physik Instrumente is offering the E-712 digital piezo-stage controller designed for multiaxis piezo-nanopositioning systems. With its high-performance processor and real-time operating system, the device can precisely control the trajectory of as many as six axes even during high-velocity motion on a millisecond time scale. Digital linearization algorithms based on higher-order polynomials deal with the nonlinear nature of PZT actuator material and can reduce motion errors to 0.001% of the travel range. The high sampling rate of 50 kHz enables the driving of ultrafast piezo stages with submillisecond response times; also incorporated are 20-bit D/A converters and ultralow-noise voltage amplifiers. The E-712 provides flexible interfacing with USB, Ethernet, RS-232, and optional high-bandwidth analog ports. *Physik Instrumente LP*, 16 Albert Street, Auburn, MA 01501, <http://www.pi-usa.us>

See www.pt.ims.ca/16304-140

New literature

MSC Industrial Supply Co has published its 2008 Motors catalog with a

substantial number of new brands and new product categories. Included is a reference tool that allows users to enter a motor identification number for popular brands to determine possible replacement models. The catalog is available online. *MSC Industrial Direct Co Inc*, 75 Maxess Road, Melville, NY 11747-3151, <http://www1.mscdirect.com>
See www.pt.ims.ca/16304-141

Version 3 of ControlSoft's *PID Loop Tuning Pocket Guide* lets users achieve well-tuned loops as part of a strategy for reducing energy consumption. The 12-page publication includes an expanded reference section on common controllers. *ControlSoft Inc*, 5387 Avion Park Drive, Highland Heights, OH 44143, <http://www.controlsoftinc.com>
See www.pt.ims.ca/16304-142

The fourth edition of the AccuTOF-DART Applications Notebook from JEOL USA covers topics such as real-time analysis of pharmaceutical drugs in dose form or in bodily fluids, organic and organometallic compounds, explosives and arson accelerators, chemical weapons agents, and adhesives. *JEOL USA Inc*, 11 Dearborn Road, Peabody, MA 01960, <http://www.jeolusa.com>
See www.pt.ims.ca/16304-143

fields and is designed specifically for magnetic resonance imaging systems used in hospitals, medical research, and industrial applications. The device is insensitive to EMI and RFI that can badly affect conventional encoders; it is trademarked as "ZapFree." The encoder offers 200 quadrature pulses per revolution resolution and connects to the company's MR310 remote encoder interface module via a simplex fiber link that can be as long as 1000 m. The module provides conventional D/A position and speed feedback signals for the motion control system. It also furnishes a multiplier/divider function and A/B quadrature, RS-232/422 serial interface, and analog programmable 4–20 mA and 0–10 V outputs for speed or position. *Micronor Inc*, 3483 Old Conejo Road, Suite 203, Newbury Park, CA 91320, <http://www.micronor.com>

See www.pt.ims.ca/16304-139

A NEW GENERATION of BIPOLAR POWER

BOP 1 KILOWATT from KEPCO



BUILT-IN ARBITRARY WAVEFORM GENERATOR

The BOP 1KW from Kepco are true 4-quadrant programmable voltage and current supplies capable of full source and sink operation. To achieve low dissipation and high efficiency, when sinking power from a load, the BOP 1KW from Kepco recuperate the energy for re-use. The key to this is a bi-directional power factor correction (PFC) circuit, which allows transparent energy interchange without dissipative sinking. Keypad controls allow for automatic creation and display of various waveforms and complex patterns. They meet the EN61000-3-2 harmonic limits. A built-in EN55022 Class B input EMI filter is provided.

For more information visit the Kepco website:

www.kepcopower.com/bophi.htm



KEPCO, INC. • 131-38 Sanford Ave. • Flushing, NY 11355 USA • Tel: (718) 461-7000
Fax: (718) 767-1102 • Email: hq@kepcopower.com • www.kepcopower.com

See www.pt.ims.ca/16304-32



National Academy of Sciences 2009 Comstock Prize in Physics Call for Nominations

Awarded to a resident of North America for an innovative discovery in electricity, magnetism, or radiant energy, broadly interpreted.

Nominations accepted through September 15, 2008.
Visit www.nasonline.org/awards for details.

Other 2009 Physics Awards:
Henry Draper Medal (astronomical physics)
NAS Award for Initiatives in Research (nanoscience)

National Academy of Sciences Awards
www.nasonline.org | awards@nas.edu | (202) 334-1602

See www.pt.ims.ca/16304-33