

Statement of Ownership, Management, and Circulation

(Act of 12 August 1970; Section 3685, Title 39, USC)

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 - A. Total number of copies (net press run)
Average* 88 038 August** 85 142
 - B. Paid subscriptions
 - 1,2. Mailed subscriptions
Average* 64 502 August** 62 239
 - 3,4. Sales through dealers and carriers, street vendors, counter sales outside USPS; other classes mailed
Average* 13 103 August** 12 683
 - C. Total paid distribution (sum of B1–B4)
Average* 77 605 August** 74 922
 - D. Free or nominal rate distribution
 - 1,2. Free or nominal rate mail copies
Average* 7 734 August** 8 079
 - 3,4. Free or nominal rate copies mailed at other classes or other distribution
Average* 2 447 August** 1 588
 - E. Total free or nominal rate distribution (sum of D1–D4)
Average* 10 181 August** 9 667
 - F. Total distribution (sum of C and E)
Average* 87 786 August** 84 589
 - G. Copies not distributed (office use, leftovers, and spoiled)
Average* 252 August** 553
 - H. Total (sum of F and G—should equal net press run shown in A)
Average* 88 038 August** 85 142
 - I. Percent paid (C/F × 100)
Average* 88.40% August** 88.57%
16. Electronic copy circulation: PHYSICS TODAY
 - A. Paid electronic copies
Average* 30 288 August** 29 844
 - B. Total paid print copies (line 15C) plus electronic copies (line 16A)
Average* 107 893 August** 104 766
 - C. Total print distribution (line 15F) plus electronic copies (line 16A)
Average* 118 074 August** 114 433
 - D. Percent paid (both print and electronic copies) (B/C × 100)
Average* 91.38% August** 91.55%

* Average number of copies of each issue during preceding 12 months.

** Actual number of copies of single issue published nearest to filing date.

I certify that the statements made by me above are correct and complete.

Larry Fishbein, Publisher

NEW PRODUCTS

Focus on lasers, imaging, and microscopy

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 ptpub@aip.org.

Andreas Mandelis

Motorized XY stage

Physik Instrumente (PI) has introduced a motorized XY stage optimized for optical microscopy. The M-971 is designed to be integrated with systems used for inspection, lithography, and biomedical engineering. According to the company, the stage's components make it suitable for cost-sensitive OEM applications. The drivetrain is based on a widely used PI linear stage with proven reliability and long lifetime. Several short crossed-roller guides distribute the load evenly over a large surface and ensure high stiffness and good travel accuracy. Since a simple controller can be used with the M-971's stepper motors, encoders are not needed. The XY stage is equipped with limit and reference switches to ensure fast, precise referencing and safe operation. *Physik Instrumente LP, 16 Albert St, Auburn, MA 01501, www.pi-usa.us*



UV-enhanced cameras

PCO has enhanced its cameras for microscopy and life sciences. It has added a specialized input window inside its pco.panda 4.2 bi UV and pco.edge 4.2 bi UV to help users achieve high quantum efficiency in the UV-wavelength range. The systems are based on the company's scientific CMOS cameras with advanced back-illuminated sensor technology. That technology makes the compact pco.panda 4.2 bi UV suitable for demanding lighting conditions, even without active cooling. The pco.edge 4.2 bi UV has an adjustable cooling system that allows the use of air or water to cool the sensor down to -25°C . At that temperature, the dark current is reduced to $0.2\text{ e}^{-}/\text{pixel/s}$. The cameras' high resolution and $6.5 \times 6.5\text{ }\mu\text{m}^2$ pixel size ensure detail diversity and high-quality images. *PCO-Tech, 6930 Metroplex Dr, Romulus, MI 48174, www.pco-tech.com*



Single-frequency green laser



M Squared has made available a single-frequency, 532 nm laser for use in demanding scientific and industrial applications such as quantum research and systems, integrated circuits, space, and biophotonics. Equinox can operate as a stand-alone laser and is suitable as a pump source for CW and pulsed titanium:sapphire laser systems. It can also be used for pumping dye lasers, frequency doubling and mixing, and optical tweezing and trapping. Equinox features up to 18 W output, consistent low-noise performance at all powers, and narrow line width. It offers high mechanical and thermal stability, and Invar materials minimize effects from vibrations and thermal variations. According to the company, the fully automated laser is reliable, robust, and easy to use. *M Squared, 1 Kelvin Campus, West of Scotland Science Park, Glasgow G20 0SP, UK, www.m2lasers.com*

Flexible laser-wavelength selector

Spectrolight has brought to market the flexible wavelength selector (FWS) Poly laser version, a tunable filter that uses the company's TwinFilm technology and a USB connector to provide simple software control (scanning or setting) of the center wavelength and bandwidth. It is compatible with supercontinuum lasers from NKT Photonics, YSL Photonics, and Leukos, and it debuts with six models that cover the visible-, UV-, and custom-wavelength ranges. Depending on the model, the center-wavelength tuning range can be as wide as approximately 500 nm or as narrow as approximately 50 nm, and the bandwidth can be adjusted from around 3 nm to 15 nm. Applications for the FWS Poly include hyperspectral imaging, fluorescence microscopy, and machine vision; with OEM instruments, it can be used in life sciences instrumentation for flow cytometry and DNA sequencing. **Spectrolight Inc.**, 19800 MacArthur Blvd, Ste 300, Irvine, CA 92612, www.spectrolightinc.com



Compact DPSS laser

Quantum Composers has added a diode-pumped solid-state (DPSS) neodymium-doped yttrium aluminum garnet laser to its Jewel laser series. The MiniJewel delivers 4 mJ of energy at its fundamental output of 1064 nm with repetition rates up to 50 Hz. The pulsed, conductively cooled, multimode laser comes

with an optional built-in attenuator. It can be supplemented with nonlinear modules for 1064/532 nm, 532/355 nm, or 355/266 nm. The compact laser can be mounted on microscopes, integrated into portable systems, and used in limited-space applications. According to the company, the MiniJewel's rugged resonator design prevents misalignment more effectively than other lasers. Applications include laser-induced breakdown spectroscopy, particle image velocimetry, and microablation. **Quantum Composers Inc.**, 212 Discovery Dr, Bozeman, MT 59718, www.quantumcomposers.com



Fluorescence multiple-source laser module

Fisba has expanded the features and functions of its READYBeam multiple-source laser module to offer users a simple, compact, powerful device for fluorescence excitation in analytical instruments and microscopy applications. According to the company, the updated instrument has an integrated laser driver that reduces the footprint, development time, and integration risk of multiple-wavelength light sources. The module features 405 nm, 488 nm, and 638 nm wavelengths and output power greater than 30 mW per wavelength. Its benefits include embedded cooling, photo feedback, and optica communication. The unit is available in two primary configurations: the READYBeam bio and READYBeam ind. **Fisba AG**, Rorschacherstrasse 268, 9016 St Gallen, Switzerland, www.fisba.com



Near-IR phase modulator

Laser Components has made an addition to its NIR-MPX series of phase modulators from Photline Technologies. The devices are designed to operate in the 1000 nm wavelength band and are available

with various modulation bandwidths, from low frequency to 10 GHz and beyond. They use a proton-exchanged-based waveguide process that delivers high stability and a high photorefractive threshold. The latest addition to the series, the 2 GHz NIR-MPX-LN-02 model, offers a bandwidth and half-wave voltage combination that makes it suitable for spectral broadening applications. **Laser Components USA Inc.**, 116 S River Rd, Bldg C, Bedford, NH 03110, www.lasercomponents.com



DIGITAL PULSE PROCESSORS



**Digital Pulse Processor
Shaping Amplifier
MCA
Power Supplies**

Features of the PX5:

- Compatible with all Amptek detectors & detectors from other manufacturers
- 80 MHz ADC
- Trapezoidal and CUSP shaping
- Reduced ballistic deficit
- High count rate capability & stability
- High throughput & pile-up rejection
- MCA with 8 k channels
- USB, RS232 & Ethernet interface
- Free software for instrument control, data acquisition, and analysis
- Free Software Developer's Kit (SDK)
- Oscilloscope mode

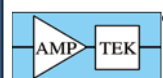


Size: 3.5 in. x 2.5 in.

Features of the DP5:

- 80 MHz ADC
- Replaces both shaping amplifier and MCA
- Supports both reset and feedback preamplifiers of either polarity
- 16 SCAs
- Configurable for use with PMTs
- For OEM or custom laboratory use
- Highly configurable

OEM's #1 Choice



AMETEK
MATERIALS ANALYSIS DIVISION

AMPTEK Inc.
amptek.com

Tenure-track Faculty Positions

The Department of Physics invites applications for tenure-track faculty positions at the **Assistant Professor level in experimental and theoretical physics**, with specialty in the areas of **High Energy Theory** and **Cosmology**, **Particle Physics Experiment**, and **Observational Cosmology**.

Appointments at the rank of Associate Professor or above will be considered for candidates with an exceptional record of research excellence and academic leadership. The current faculty at The Hong Kong University of Science and Technology in particle physics and cosmology group includes Professor Andy Cohen, Professor George Smoot, Professor Henry Tye, Professor Tao Liu, and Professor Yi Wang. The Department is growing its effort in particle physics and cosmology group by hiring five new faculty in theory and experiment. Further information about the Department can be found at <http://physics.ust.hk>.

Applicants must possess a PhD degree in physics or a related field. The successful candidate should have a strong track record of research. In addition to pursuing a vibrant research program the candidates are expected to engage in effective teaching at the undergraduate and graduate levels.

Starting salary will be highly competitive and commensurate with qualifications and experience. Fringe benefits including medical and dental benefits, annual leave and housing benefits will be provided where applicable. Initial appointment will normally be on a three-year contract. A contract-end gratuity will be payable upon successful completion of contract.

Application Procedure:

Applicants should submit their curriculum vitae, together with a cover letter, a list of publications, a brief statement of current interests, a plan for future research program, and three reference letters, via AcademicJobsOnline.Org.

Separate application should be submitted via AcademicJobsOnline.Org for the following research areas:

High Energy Theory and Cosmology (PHYS1017H):

<https://academicjobsonline.org/ajob/jobs/13055>

Particle Physics Experiment (PHYS1017P):

<https://academicjobsonline.org/ajob/jobs/13056>

Observational Cosmology (PHYS1017C):

<https://academicjobsonline.org/ajob/jobs/13057>

Screening of applications will begin as soon as possible, and will continue until the positions are filled.

NEW PRODUCTS



Standard and high-performance cameras

The new ace 2 camera series from Basler includes two product lines: the economical ace 2 Basic, for standard vision-system applications, and the ace 2 Pro, for more demanding requirements. Both lines feature state-of-the-art CMOS sensor technology and GigE or USB 3.0 interfaces. The Basic models offer 2.3 MP resolution and 51 fps with the GigE interface and 160 fps with the USB 3.0 interface. The ace 2 Pro line offers two advanced in-camera features. Compression Beyond compresses image data directly in the camera's field-programmable gate arrays in real time without sacrificing image quality, and it makes more bandwidth available, which ensures higher frame rates. Pixel Beyond uses an interpolation method developed by Basler to change the pixel size and thereby allow adjustments of sensor characteristics, so resolution can be scaled and the amount of data reduced. **Basler Inc**, 855 Springdale Dr, Ste 203, Exton, PA 19341, www.baslerweb.com

Ytterbium fiber-based laser

Chromacity has made a 520 nm addition to its family of air-cooled ytterbium fiber-based lasers. Essentially a frequency-doubled version of the company's 1040 nm laser, it provides a fixed 520 nm output at a power range from 500 mW to 1 W and the option to deliver dual output at 520 nm or 1040 nm from a single unit. The Chromacity 520 is suitable for use in life and materials sciences, fundamental research, nanoparticle technology development, photodynamic therapy, and multiphoton imaging. According to the company, the laser's ultrashort pulse durations and high peak powers may help generate new developments in optical parametric oscillator pumping, four-wave mixing, amplifier seeding, terahertz generation, and other nonlinear processes. **Chromacity Ltd**, Livingstone House, 43 Discovery Ter, Research Ave N, Riccarton, Edinburgh EH14 4AP, UK, www.chromacitylasers.com



Long-focal-length collimators

HGH has expanded its IRCOL range of collimators by adding a 4 m focal length designed to characterize and validate the performance of very powerful IR- and visible-range cameras. The company claims that the long length allows the new IRCOL 300-4000 to stimulate very high frequencies for the highest-resolution testing. Driven by HGH's Infratest software, the IRCOL 300-4000 can perform tests to determine noise-equivalent irradiance, spatial resolution, modulation transfer function, distortion, noise-equivalent temperature difference, and minimum resolvable temperature difference. **HGH Systèmes Infrarouges**, 10 Rue Maryse Bastié, 91430 Igny, France, www.hgh-infrared.com

Objective positioner

According to Prior Scientific, its NanoScan OP400 piezo-based objective positioner provides repeatable Z-stacking and the fastest step-and-settle time of any similar device. Its innovative mechanical design and integral capacitive feedback sensors deliver high positioning accuracy and resolution. The OP400 is compatible with most microscopes and objective lenses and has a range of optimized settings for different objective sizes, weights, and performance requirements. Coupled with the NPC-D-6110 digital controller from Prior's Queensgate Instruments brand, the system is quick to set up and use. With variable acceleration and deceleration algorithms, the digital-control technology can precisely manage stage movement. **Prior Scientific Instruments Ltd**, 3-4 Fielding Industrial Estate, Wilbraham Rd, Fulbourn, Cambridge CB21 5ET, UK, www.prior.com **PT**

