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Photonic thermal management of overhead cables via high-thermal-conductivity radiative cooling

Kai Xu, Peng-Fei Cao ... Qiaoqiang Gan

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Transmission of multi-level time-bin encoded cluster states over 29 km of partially deployed optical fiber

We transmit cluster states over 29.5 km of partially deployed optical fiber using multi-level time-bin encoding, demonstrating fiber-compatible complex quantum resources for quantum networking.

Philip Rübeling, Robert Johanning ... Michael Kues

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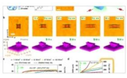
Photo-guided azopolymer hydrogel actuators

David Urban, Ryota Toyohara ... Emiliano Descrovi



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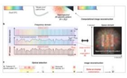
Hyperspectral dual-comb compressive ghost imaging with deep learning reconstruction

Myoung-Gyun Suh, David Dang ... Ho Wai Howard Lee



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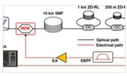
Breaking the phase noise–mode purity trade-off in long-loop OEOs via cascaded zero-dispersion recirculating loops

Zhuoran Wang, Santiago Bernal ... Lawrence R. Chen



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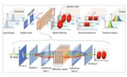
Spatiotemporal all-optical diffractive neural networks empowered by spatiotemporal light field manipulation

Spatiotemporal all-optical neural network (ST-AONN) system. This work incorporates the time dimension into traditional space-only diffractive neural networks, enabling spatiotemporal multi-dimensional light field modulation and signal processing, delivering additional modulation dimensions and faster operational speed.

Fu Feng, Ziyang Zhang ... Xiaocong Yuan



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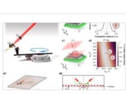
Gigavoxel-scale multiple-scattering-aware lensless holotomography

Mikołaj Rogalski, Julianna Winnik ... Maciej Trusiak



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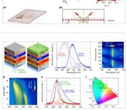
Narrowband, angle-stable, and highly efficient polariton organic light emitting diodes employing thermally activated delayed fluorescence

Andreas Mischok, Simon Lennartz ... Malte C. Gather



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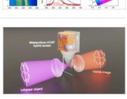
Enhanced infrared-to-visible upconversion imaging via metasurface–lanthanide nanoparticle hybrid screens

A flat-band dielectric metasurface enhances lanthanide upconversion by over 1000×, enabling compact, high-resolution infrared-to-visible imaging.

Nima Sefidmooye Azar, Matthew Parry ... Kenneth B. Crozier



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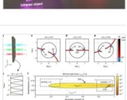
Exceptional points, lasing, and coherent perfect absorption in Floquet scattering systems

David Globosits, Puneet Garg ... Stefan Rotter



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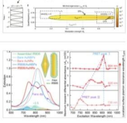
Tuning superposition of multiple Fano interferences for efficient plasmon resonance energy transfer to the assembled molecules

By tuning the superposition of multiple Fano interferences in IR806/Au hybrids, we achieve spectral overlap of two plasmon resonance energy transfer (PRET) peaks, maximizing energy transfer to assembled IR806 molecules.

Yishuang Wang, Xueqing Sang ... Qu-Quan Wang



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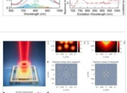
Single-mode lasers before the merger

G. Zito



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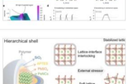
An "interlocking" core-shell architecture stabilises perovskite nanocrystal emitters

Hierarchical shell enables lattice-interface interlocking, suppresses coupled degradation, delivers near-unity photoluminescence quantum yields and T_{80} exceeding 27,000 hours under continuous blue-light exposure, and demonstrates efficient perovskite nanocrystal color-conversion display prototypes.

Xinyu Shen & Henry J. Snaith



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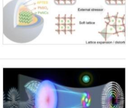
Broadening the color palette of optical skyrmions

Mingjian Cheng & Andrew Forbes



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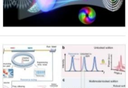
Multimodal locking-enabled robust and day-scale low-repetition-rate soliton microcomb for high-precision metrology

Implemented on a Si_3N_4 microresonator, a multimodal locking architecture simultaneously stabilizes pump frequency, cavity resonance, and repetition rate, enabling robust and day-scale low-repetition-rate soliton microcombs for precision metrology.

Jian Tang, Jun Yang ... Tian Jiang



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Photophysical lock-in detection enables background-free upconversion emission imaging

Upon dual-frequency excitation upconversion nanoparticles generate beat-frequency signals owing to their inherent optical nonlinearity. These low-frequency signals are absent in any excitation and background light, enabling background-free camera-based detection.

Niusha Bagheri, Chenyi Wang ... Jerker Widengren

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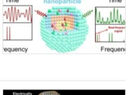
Electrically switchable dual-focus metalens for depth-extended in vivo photoacoustic imaging of ophthalmic vascular disease

Electrically tunable dual-focus metalens-based photoacoustic microscopy enables 1.2 mm axial coverage and 3.7 μm resolution, switching focal modes without mechanical motion for high-resolution volumetric imaging with improved signal-to-noise ratio.

Hongyoon Kim, Eunwoo Park ... Junsuk Rho



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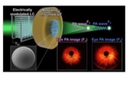
Remote engineering of particle-like topologies to visualise entanglement dynamics

Measuring one photon's spin remotely engineers topology in its entangled partner, creating quantum multiskyrmions with particle-like motion that reveal entanglement dynamics and enable robust quantum sensing and communication.

Fazilah Nothlawala, Bereneice Sephton ... Andrew Forbes



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Van der Waals/MCT heterostructure enabled high-performance uncooled mid-infrared photodetectors via synergistic suppression of dark current and interfacial recombination

Xinlei Zhang, Tao Zhou ... Zhenhua Ni

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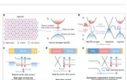
Label-free ovarian cancer histopathological diagnosis using two-photon autofluorescence microscopy with a joint denoising and segmentation framework

Zhengyuan Pan, Naikun Song ... Bobo Gu



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