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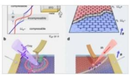

Zhenbing Dai, Wenjun Zheng ... Lukas Wehmeier

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Waveguide-integrated 2D-material infrared photodetectors: fundamentals, advances, and insights

This review examines waveguide-integrated two-dimensional-material infrared photodetectors, focusing on waveguide platforms, material integration, device mechanisms, performance enhancement strategies, and remaining challenges for practical on-chip detection.

Jiachen Wang, Zezhou Lin ... Ning Hua Zhu

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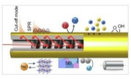

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Generation of spatiotemporal optical coil with controllable transverse intensity chirality

Dana Jiashaner, Xingyuan Zhang ... Qiwen Zhan

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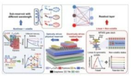
Orthogonally regulated multi-timescale reservoir and linear nonvolatile readout in a vertical transistor for dynamic machine vision

A dual-mode Fe-vOFET integrates multi-timescale photoelectric reservoirs and linear nonvolatile ferroelectric readout, enabling compact, efficient dynamic machine vision with high recognition accuracy.



Qinyong Dai, Hangyuan Cui ... Yun Li

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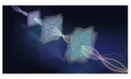
Freespace "twistronics": moiré structured light for optical supertopologies

We extend "twistronics" from 2D materials to freespace optics. By twisting moiré structured light, we create optical topological superlattices with super-robust, long-distance, nondiffractive propagation, and multi-dimensions to reconfigure skyrmionic topologies.



Vasu Dev & Yijie Shen

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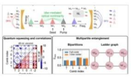
Long-range spectral entanglement and quantum correlations in highly nondegenerate multi-comb and ultrafast systems

A cavity with idler-mediated cascaded second-order nonlinearity generates a nondegenerate system of nested frequency combs, enabling long-range quantum squeezing across distinct spectral bands and multipartite entanglement for cluster states.



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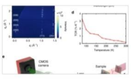

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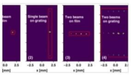

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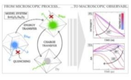

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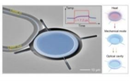

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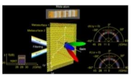

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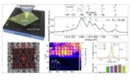

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Kai Xu, Peng-Fei Cao ... Qiaoqiang Gan

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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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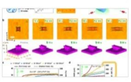
Photo-guided azopolymer hydrogel actuators



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