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## 热点专题

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### Special Topic: Artificial Intelligence Innovation in Remote Sensing

Gest Editors: Jun LI, Xian SUN, Hanwen YU, Feng XU, Jon Atli BENEDIKTSSON

2023, Vol.66, No.4 【AI 与遥感交叉专题】

- From single- to multi-modal remote sensing imagery interpretation: a survey and taxonomy
- A survey on hyperspectral image restoration: from the view of low-rank tensor approximation
- Learning the external and internal priors for multispectral and hyperspectral image fusion
- Wide-beam SAR autofocus based on blind resampling
- MFVNet: deep adaptive fusion network with multiple field-of-views for remote sensing image semantic segmentation
- Detecting building changes with off-nadir aerial images
- AIR-PV: a benchmark dataset for photovoltaic panels extraction in optical remote sensing imagery
- Multi-layer composite autoencoders for semi-supervised change detection in heterogeneous remote sensing images

### Special Topic: Spectrum, Coverage, and Enabling Technologies for Intelligent 6G

Gest Editors: Wei XU, Yongming HUANG, Wei WANG, Fusheng ZHU, Xinsheng JI

2023, Vol.66, No.3 【智能 6G 频谱、覆盖与使能技术专题】

- Toward ubiquitous and intelligent 6G networks: from architecture to technology
- Pushing AI to wireless network edge: an overview on integrated sensing, communication, and computation towards 6G
- SpectrumChain: a disruptive dynamic spectrum sharing framework for 6G
- Coverage enhancement for 6G satellite-terrestrial integrated networks: performance metrics, constellation configuration and resource allocation
- Reconfiguring wireless environment via intelligent surfaces for 6G: reflection, modulation, and security
- Full-spectrum cell-free RAN for 6G systems: system design, and experimental results
- 6G extreme connectivity via exploring spatiotemporal exchangeability

## Special Focus on Cyber Security in the Era of Artificial Intelligence

Gest Editors: Elisa BERTINO, N.ASOKAN, Zhenkai LIANG, Xinsheng JI, Xiaofeng TAO, Qi LI, Kui REN

2022, Vol.65, No.7 【人工智能时代的网络空间安全专题】

- Intelligent networking in adversarial environment: challenges and opportunities
- Non-IID federated learning via random exchange of local feature maps for textile IIoT secure computing
- VulnerGAN: a backdoor attack through vulnerability amplification against machine learning-based network intrusion detection systems
- Reliable resource allocation with RF fingerprinting authentication in secure IoT networks
- Defensive deception framework against reconnaissance attacks in the cloud with deep reinforcement learning
- Certified defense against patch attacks via mask-guided randomized smoothing
- ACCEL: an efficient and privacy-preserving federated logistic regression scheme over vertically partitioned data
- Post quantum secure fair data trading with deterability based on machine learning

## Special Focus on Reconfigurable Intelligent Surfaces for Future Wireless Communications

Gest Editors: Ying-Chang LIANG, Caijun ZHONG, Liang YANG, Zhen-Qing HE, Marco DI RENZO

2021, Vol.64, No.10 【智能表面专题】

- Reconfigurable intelligent surfaces for smart wireless environments: channel estimation, system design and applications in 6G networks
- Low-cost intelligent reflecting surface aided Terahertz multiuser massive MIMO: design and analysis
- Optical true time delay pool-based beamforming and limited feedback for reconfigurable intelligent surface-empowered cloud radio access networks

## Special Focus on Wireless Communications with Unmanned Aerial Vehicles (UAVs)

Gest Editors: Yong ZENG, Lingyang SONG, Zhaoyang ZHANG, Min SHENG, Jie XU, Robert SCHOBBER

2021, Vol.64, No.4 【无人机通信专题】

- A survey of prototype and experiment for UAV communications
- Application of NOMA for cellular-connected UAVs: opportunities and challenges
- Energy-efficient design for mmWave-enabled NOMA-UAV networks
- Resource and trajectory optimization in UAV-powered wireless communication system
- Leveraging partially overlapping channels for intra- and inter-coalition communication in cooperative UAV swarms
- A large-scale clustering and 3D trajectory optimization approach for UAV swarms
- Performance analysis of dual-hop UAV relaying systems over mixed fluctuating two-ray and Nakagami-m fading channels

## Special Focus on Ultra-Reliable Low-Latency Communications in Wireless Networks

Gest Editors: Fuchun ZHENG, Qimei CUI, Gang WU

2021, Vol.64, No.2 【高可靠低时延无线通信专题】

- Ultra-reliable and low-latency communications: applications, opportunities and challenges
- Dynamic relay access for D2D-aided low-latency and high-reliability communications
- Effective age of information in real-time wireless feedback control systems

## ✧ 无线通信与通信系统

### [Hot Paper|综述] **Towards 6G wireless communication networks: vision, enabling technologies, and new paradigm shifts**

Keywords 6G, vision, network architecture, air interface and transmission technologies, space-air-ground-sea integrated network, all spectra, artificial intelligence, network security

Cite as: You X H, et al. Sci China Inf Sci, vol. 64, no. 1, pp.110301, 2021. doi: 10.1007/s11432-020-2955-6

### [综述] **Pushing AI to wireless network edge: An overview on integrated sensing, communication, and computation towards 6G**

Keywords: Sixth-generation (6G), edge intelligence, artificial intelligence of things (AIoT), integrated sensing, communication, and computation (ISCC)

Cite as: Zhu G X, Lyu Z H, Jiao X, et al. Sci China Inf Sci, 2023, 66(3): 130301, doi: 10.1007/s11432-022-3652-2

### [综述] **SpectrumChain: a disruptive dynamic spectrum sharing framework for 6G**

Keywords: Dynamic Spectrum Sharing, Blockchain, 6G

Cite as: Wu Qihui, Wang Wei, Li Zuguang, et al. Sci China Inf Sci, 2023, 66(3): 130302

### [综述] **Coverage enhancement for 6G satellite-terrestrial integrated networks: performance metrics, constellation configuration and resource allocation**

Keywords: 6G Satellite-terrestrial integrated networks, on-demand wireless coverage, performance metrics, constellation configuration, intelligent resource scheduling

Cite as: Sheng M, Zhou D, Bai W G, et al. Sci China Inf Sci, 2023, 66(3): 130303, doi: 10.1007/s11432-022-3636-1

### [综述] **Reconfiguring wireless environment via intelligent surfaces for 6G: reflection, modulation, and security**

Keywords: reconfigurable intelligent surface, physical-layer security, RIS-assisted wireless communications, phase modulation, 6G

Cited as: Xu J D, Yuen C, Huang C W, et al. Sci China Inf Sci, 2023, 66(3): 130304, doi: 10.1007/s11432-022-3626-5

### [综述] **Ultra-wideband fiber-THz-fiber seamless integration communication system toward 6G: architecture, key techniques, and testbed implementation**

Keywords: 6G; THz wireless communication; optical fiber communication; seamlessly converged architecture; real-time communication

Cite as: Zhu M, Zhang J, Hua B C, et al. Sci China Inf Sci, 2023, 66(1): 113301, doi: 10.1007/s11432-022-3565-3

### [综述] **A systematic review for smart identifier networking**

Keywords: identifier networking; smart collaborative networking; smart integration identifier networking; smart identifier networking; the next-generation networking

Cite as: Zhang H K, Feng B H, Tian A L T. Sci China Inf Sci, 2022, 65(12): 221301, doi: 10.1007/s11432-022-3577-8

**[综述] Vehicular mobility patterns and their applications to Internet-of-Vehicles: a comprehensive survey**

Keywords: vehicular mobility pattern; Internet-of-Vehicles (IoV); traffic flow; spatial point process; trajectory prediction; machine learning; deep learning

Cite as: Cui Q M, Hu X X, Ni W, et al. Sci China Inf Sci, 2022, 65(11): 211301, doi: 10.1007/s11432-021-3487-x

**[综述] Blockchain-based vehicular edge computing networks: the communication perspective**

Keywords: block propagation; blockchain; consensus; VEC network

Cite as: He L, Li F C, Xu H K, et al. Sci China Inf Sci, 2023, 66(7): 172301, doi: 10.1007/s11432-022-3658-7

**[综述] A new 5G radio evolution towards 5G-Advanced**

Keywords: 3GPP; 5G; NR; 5G-Advanced

Cite as: Pang J Y, Wang S B, Tang Z F, et al. Sci China Inf Sci, 2022, Vol. 65, no. 9, pp. 191301, doi: 10.1007/s11432-021-3470-1

**[综述] Vision, application scenarios, and key technology trends for 6G mobile communications**

Keywords: 6g mobile communication; 6g vision; application scenarios of 6g; terahertz communication; integrated sensing and communication; integrated intelligence and communication; ultra-massive mimo; reconfigurable intelligent surface; co-frequency co-time full-duplex; holographic radio technology

Cite as: Wang Z Q, Du Y, Wei K J, et al. Sci China Inf Sci, Vol. 65, no.5, pp.151301, 2022. doi: 10.1007/s11432-021-3351-5

**[综述] An overview on integrated localization and communication towards 6G**

Keywords wireless localization, integrated localization and communication, cellular networks, B5G, 6G

Cite as: Z. Q. XIAO, Y. Zeng. Sci China Inf Sci, vol. 65, no. 3, pp.131301, 2022. doi: 10.1007/s11432-020-3218-8

**[综述] Key issues and algorithms of multiple-input-multiple-output over-the-air testing in the multi-probe anechoic chamber setup**

Keywords: MIMO ota testing; multi-probe anechoic chamber; 5g; spatial channel

Cite as: Pei H L, Chen X M, Huang X Y, et al. Sci China Inf Sci, 2022, Vol. 65, no.3, pp.131302. doi: 10.1007/s11432-021-3285-y

**[综述] Reconfigurable intelligent surfaces for smart wireless environments: channel estimation, system design and applications in 6G networks**

Keywords: reconfigurable intelligent surface; channel estimation; RIS-aided wireless communications; RIS-based information transmission; 6G

Cite as: Y.-C. Liang, J. Chen, R. Long et al. Sci China Inf Sci, vol. 64, no. 10, pp. 200301, 2021. doi: 10.1007/s11432-020-3261-5

**[综述] Acquisition of channel state information for mmWave massive MIMO: traditional and machine learning-based approaches**

Keywords: beam training; channel estimation; machine learning; massive MIMO; millimeter wave communications; mmWave

Cite as: C. H. Qi, P. H. Dong, W. Y. Ma, et al. Sci China Inf Sci, vol. 64, no. 8, pp. 181301, 2021. doi: 10.1007/s11432-021-3247-2

**[综述] A survey of prototype and experiment for UAV communications**

Keywords: UAV communications; prototype development; channel model; energy efficiency; UAV-enabled communications platforms; cellular-connected UAVs

Cite as: Q. Song, Y. Zeng, J. Xu, et al. Sci China Inf. Sci., vol. 64, no. 4, pp.140301, 2021. doi: 10.1007/s11432-020-3030-2

**[综述] Application of NOMA for cellular-connected UAVs: opportunities and challenges**

Keywords: cellular-connected UAVs; non-orthogonal multiple access; signal characteristics; aerial user rate; terrestrial user rate

Cite as: W. K. New, C. Y. Leow, K. Navaie, et al. Sci China Inf Sci, vol. 64, no. 4, pp.140302, 2021. doi: 10.1007/s11432-020-2986-8

**[综述] Ultra-reliable and low-latency communications: applications, opportunities and challenges**

Keywords: ultra-reliable and low-latency; advanced transmission technologies; physical layer; network design; real-time guarantee

Cite as: D. Q. Feng, L. F. Lai, J. J. Luo, et al. Sci China Inf Sci, vol. 64, no. 2, pp.120301, 2021. doi: 10.1007/s11432-020-2852-1

**[Highly Cited Paper!] Energy-efficient design for mmWave-enabled NOMA-UAV networks**

Keywords: energy efficiency; hybrid precoding; millimeter-wave; non-orthogonal multiple access; placement optimization; power allocation; unmanned aerial vehicle

Cite as: X. W. Pang, J. Tang, N. Zhao, et al. Sci China Inf Sci, vol. 64, no. 4, pp.140303, 2021. doi: 10.1007/s11432-020-2985-8

**Knowledge-enhanced semantic communication system with OFDM transmissions**

Keywords: semantic communication; knowledge graph; OFDM; transformer; deep learning

Cite as: Xu X D, Xiong H C, Wang Y N, et al. Sci China Inf Sci, 2023, 66(7): 172302, doi: 10.1007/s11432-022-3624-4

**Mining KPI correlations for non-parametric anomaly diagnosis in wireless networks**

Keywords: random matrix theory; spectral distribution; anomaly diagnosis; data analysis; wireless networks

Cite as: Sui T F, Tao X F, Wu H C, et al. Sci China Inf Sci, 2023, 66(6): 162301, doi: 10.1007/s11432-021-3522-0

**MIMO performance enhancement of MIMO arrays using PCS-based near-field optimization technique**

Keywords: antenna correlation; array antenna; multiple-input multiple-output (MIMO) capacity

Cite as: Wang Y P, Chen X M, Pei H L, et al. Sci China Inf Sci, 2023, 66(6): 162302, doi: 10.1007/s11432-022-3595-y

**Performance analysis of full-duplex densely distributed MIMO with wireless backhaul**

Keywords: full-duplex; wireless backhaul; performance analysis; beamforming training; interference cancellation

Cite as: Wan Z Q, Pan Q J, Li J M, et al. Sci China Inf Sci, 2023, 66(6): 162303, doi: 10.1007/s11432-022-3616-9

**Power-time resource allocation for downlink SWIPT-assisted cooperative NOMA systems**

Keywords: NOMA; SWIPT; relaying; non-linear; transmit energy

Cite as: Liu C P, Zhang L, Chen Z, et al. Sci China Inf Sci, 2023, 66(5): 152303, doi: 10.1007/s11432-021-3495-y

### **Full-spectrum cell-free RAN for 6G systems: system design, and experimental results**

Keywords: 6G, Scalable cell-free massive MIMO, cell-free radio access network, prototype system.

Cited as: Wang D M, You X H, Huang Y M, et al. Full-spectrum cell-free RAN for 6G systems: system design, and experimental results. *Sci China Inf Sci*, 2023, 66(3): 130305, doi: 10.1007/s11432-022-3664-x

### **Robust online energy efficiency optimization for distributed multi-cell massive MIMO networks**

Keywords: energy efficiency; statistical CSI; multi-cell MIMO; massive MIMO; online gradient ascent; distributed processing; robust transmission

Cite as: You L, Huang Y F, Zhong W, et al. *Sci China Inf Sci*, 2023, 66(3): 132302, doi: 10.1007/s11432-021-3437-8

### **Joint information transmission design for intelligent reflecting surface aided system with discrete phase shifts**

Keywords: IRS; information transmission; constellation design

Cite as: Tao Q, Zhang S W, Zhong C J, et al. *Sci China Inf Sci*, 2023, 66(3): 132303, doi: 10.1007/s11432-021-3494-2

### **6G extreme connectivity via exploring spatiotemporal exchangeability**

Cited as: You X H. *6G Sci China Inf Sci*, 2023, 66(3): 130306, doi: 10.1007/s11432-022-3598-4

### **Energy-efficient trajectory planning and resource allocation in UAV communication networks under imperfect channel prediction**

Keywords: UAV communication networks; trajectory planning; resource allocation; channel prediction

Cite as: Sheng M, Zhao C X, Liu J Y, et al. *Sci China Inf Sci*, 2022, 65(12): 222301, doi: 10.1007/s11432-021-3332-0

### **Physical layer authentication in UAV-enabled relay networks based on manifold learning**

Keywords: UAV relay; physical layer authentication; mobility; manifold learning; diffusion map; state transition probability

Cite as: Xia S D, Tao X F, Li N, et al. *Sci China Inf Sci*, 2022, 65(12): 222302, doi: 10.1007/s11432-021-3410-2

### **Energy-efficient power allocation for cross-media communications with hybrid VLC/RF**

Keywords: cross-media communications; visible light communication; power allocation; energy efficiency; relay

Cite as: Han Y F, Xiao Y, Gao Y L, et al. *Sci China Inf Sci*, 2022, 65(12): 229301, doi: 10.1007/s11432-022-3573-3

### **Performance analysis of the nonlinear self-interference cancellation for full-duplex communications**

Keywords: full duplex; self-interference cancellation; PA nonlinearity; digital domain; performance analysis

Cite as: Hu N Z, Xiao S H, Pan W S, et al. *Sci China Inf Sci*, 2022, 65(11): 212301, doi: 10.1007/s11432-021-3303-0

### **A 24.25–27.5 GHz 128-element dual-polarized 5G integrated phased array with 5.6%-EVM 400-MHz 64-QAM and 50-dBm EIRP**

Keywords: 5G; millimeter wave; integrated circuits; phased array; CMOS

Cite as: Liu H Q, Zhao D X, Yi Y R, et al. *Sci China Inf Sci*, 2022, 65(11): 214301, doi: 10.1007/s11432-022-3584-6

### **Low-complexity beamforming design for IRS-aided communication systems**

Keywords: Intelligent reflecting surface; IRS-aided communications; Joint active and passive beamforming; Phase shift optimization; Low-complexity beamforming

Cite as: Hu X L, Peng M G, Zhong C J. Sci China Inf Sci, 2022, 65(10): 209302, doi: 10.1007/s11432-021-3456-7

### **Low-complexity transmit antenna selection for offset spatial modulation**

Keywords: multiple input multiple output; offset spatial modulation; transmit antenna selection; Euclidean distance optimized antenna selection

Cite as: Chen H, Xiao Y, Fang S, et al. Sci China Inf Sci, 2022, Vol. 65, no. 9, pp.192302, doi: 10.1007/s11432-021-3333-4

### **Active device detection and performance analysis of massive non-orthogonal transmissions in cellular Internet of Things**

Keywords: massive connections; non-orthogonal multiple access; active device detection; short-packet

Cite as: Cai D H, Fan P Z, Zou Q Y, et al. Sci China Inf Sci, 2022, Vol. 65, no. 8, pp. 182301, doi: 10.1007/s11432-021-3328-y

### **Time and energy efficient data collection via UAV**

Keywords: data collection; energy efficiency maximization; time minimization; trajectory optimization; unmanned aerial vehicle; UAV

Cite as: Wang T H, Pang X W, Tang J, et al. Sci China Inf Sci, 2022, Vol. 65, no. 8, pp.182302, doi: 10.1007/s11432-021-3343-7

### **Outage-driven link selection for secure buffer-aided networks**

Keywords: buffer-aided relay; information delay; link selection; secrecy outage probability

Cite as: Wang D W, He T M, Zhou F H, et al. Sci China Inf Sci, 2022, Vol. 65, no. 8, pp. 182303, doi: 10.1007/s11432-021-3262-3

### **A layered grouping random access scheme based on dynamic preamble selection for massive machine type communications**

Keywords: grant free; layered grouping; AMP algorithm; minimum preamble length; mMTC

Cite as: Cheng G F, Chen H, Fan P Z, et al. Sci China Inf Sci, 2022, Vol. 65, no. 7, pp. 179302, doi: 10.1007/s11432-021-3409-y

### **Polarized spatial and directional modulation toward secure wireless transmission**

Keywords: directional modulation; spatial modulation; polarization modulation; channel capacity; bit error rate

Cite as: Chen J G, Lei X, Xiao Y, et al. Sci China Inf Sci, 2022, Vol. 65, no. 7, pp. 179304, doi: 10.1007/s11432-021-3395-8

### **Joint optimization of spectral efficiency and energy efficiency with low-precision ADCs in cell-free massive MIMO systems**

Keywords: cell-free massive mimo; low-precision adc; spectral efficiency; energy efficiency; multi-objective optimization

Cite as: Wang H, Sun C, Li J M, et al. Sci China Inf Sci, Vol. 65, no.5, pp.152301, 2022. doi: 10.1007/s11432-021-3313-9

### **Density-based user clustering in downlink NOMA systems**

Keywords: noma; user clustering; machine learning; dbscan; dynamic clustering

Cite as: You H L, Hu Y Y, Pan Z W, et al. Sci China Inf Sci, Vol. 65, no.5, pp.152303, 2022. doi: 10.1007/s11432-020-3014-6

### **Generalized message passing detection of SCMA systems based on dynamic factor graph for better and flexible performance-complexity tradeoff**

Keywords: sparse code multiple access; scma; multiuser detection; message passing algorithm; mpa; factor graph; computational complexity

Cite as: Dong F Q, Zheng H J, Ma L, et al. Sci China Inf Sci, Vol. 65, no.5, pp.152306, 2022. doi: 10.1007/s11432-019-2908-x

### **Beam alignment for millimeter wave multiuser MIMO systems using sparse-graph codes**

Keywords: sparse-graph codes; mmwave communications; compressed sensing; ldpc; beam alignment

Cite as: Cheng L, Yue G R, Xiao P, et al. Sci China Inf Sci, Vol. 65, no.5, pp.159301, 2022. doi: 10.1007/s11432-021-3263-4

### **Fast ambiguous DOA elimination method of DOA measurement for hybrid massive MIMO receiver**

Keywords: doa estimation; massive mimo; hybrid analog digital; fast ambiguous phase elimination method; time delay

Cite as: Shi B H, Jiang X Y, Chen N, et al. Sci China Inf Sci, Vol. 65, no.5, pp.159302, 2022. doi: 10.1007/s11432-021-3314-4

### **On the local delay and energy efficiency under decoupled uplink and downlink in HetNets**

Keywords: coupled and decoupled ul/dl access; hetnets; stochastic geometry; local delay; energy efficiency; udn

Cite as: Huang T J, Zheng F-C, Lai L F. Sci China Inf Sci, Vol. 65, no.3, pp.132304, 2022. doi: 10.1007/s11432-021-3306-4

### **Coordinated multicast and unicast transmission in V2V underlay massive MIMO**

Keywords: coordinated multicast and unicast transmission; v2v underlay; massive mimo; statistical csi

Cite as: Niu X X, You L, Gao X Q. Sci China Inf Sci, Vol. 65, no.3, pp.132305, 2022. doi: 10.1007/s11432-020-3233-2

### **Design of a UCA structure with maximum capacity for mmWave LOS MIMO systems**

Keywords: antenna arrays; millimeter wave radio communication; optimization methods; uca; los mimo

Cite as: Fan J C, Liu H J, Luo J, et al. Sci China Inf Sci, Vol. 65, no.3, pp.139302, 2022. doi: 10.1007/s11432-020-3231-6

### **Reinforcement learning based energy efficient robot relay for unmanned aerial vehicles against smart jamming**

Keywords: unmanned aerial vehicles; relay; jamming; game theory; reinforcement learning

Cite as: Lu X Z, Jie J F, Lin Z H, et al. Sci China Inf Sci, Vol. 65, no.1, pp.112304, 2022. doi: 10.1007/s11432-020-3170-2

### **Terahertz transistors based on aligned carbon nanotube arrays**

Keywords: carbon nanotube; radio-frequency; field-effect transistors; K band; cut-off frequency

Cite as: L. Ding, Z. Y. Zhang. China Inf. Sci., vol. 65, no. 1, pp. 117301, 2022. doi: 10.1007/s11432-021-3355-0

### **Directional modulation with distributed receiver selection for secure wireless communications**

Keywords: directional modulation; distributed receiver selection; bit error rate; secrecy rate

Cite as: H. Y. Zhang, Y. Xiao, W. B. Tang, et al. Sci China Inf Sci, vol. 64, no. 12, pp. 222303, 2021. doi: 10.1007/s11432-020-3048-9



### **E-DSDV routing protocol for mobile ad hoc network for underwater electrocommunication**

Keywords: Electrocommunication; E-DSDV; Dynamic-network; Sequence-number; Real-time

Cite as: Liu R J, Wang Q H, Wang C, et al. Sci China Inf Sci, vol. 64, no. 12, pp. 229303, 2021. doi: 10.1007/s11432-019-2966-0

### **Low-cost intelligent reflecting surface aided Terahertz multiuser massive MIMO: design and analysis**

Keywords THz communication, IRS, massive MIMO, precoding error, coverage enhancement

Cite as: G. H. Yu, X. M. Chen, X. D. Shao, et al. Sci China Inf Sci, vol. 64, no.10, pp. 200302, 2021. 10.1007/s11432-021-3281-7

### **Optical true time delay pool-based beamforming and limited feedback for reconfigurable intelligent surface-empowered cloud radio access networks**

Keywords reconfigurable intelligent surface, optical true time delay, millimeter-wave, cloud radio access network, limited feedback

Cite as: H. Huang, X. W. Wang, C. F. Zhang, et al. Sci China Inf Sci, vol. 64, no. 10, pp. 200303, 2021. <https://doi.org/10.1007/s11432-020-3253-7>

### **Secure NOMA and OMA coordinated transmission schemes in untrusted relay networks**

Keywords: physical-layer security; non-orthogonal multiple access; cooperative jamming; user scheduling; untrusted relay

Cite as: Lv L, Li Z, Ding H Y, et al. Sci China Inf Sci, vol. 64, no. 10, pp. 209302, 2021. doi: 10.1007/s11432-020-3015-y

### **Covert communication with beamforming over MISO channels in the finite blocklength regime**

Keywords: beamforming; circular symmetric complex Gaussian; covert communication; MISO channels; power control

Cite as: X. C. Yu, Y. Luo, W. Chen. Sci China Inf Sci, vol. 64, no. 9, pp.192303, 2021. doi: 10.1007/s11432-019-2919-5

### **Optical true time delay pool based hybrid beamformer enabling centralized beamforming control in millimeter-wave C-RAN systems**

Keywords: optical true time delay; MIMO system; millimeter wave; cloud radio access network; multi-user hybrid precoding

Cite as: H. Huang, C. F. Zhang, M. C. Yang, et al. Sci China Inf Sci, vol. 64, no. 9, pp.192304, 2021. doi: 10.1007/s11432-020-2991-1

### **Energy-efficient URLLC service provisioning in softwarization-based networks**

Keywords: softwarization-based networks; SDN/NFV; URLLC; energy efficiency; dynamic resource allocation

Cite as: M. J. Liu, G. Feng, W. H. Zhuang. Sci China Inf Sci, vol. 64, no. 8, pp.182302, 2021. doi: 10.1007/s11432-020-3094-6

### **Resource optimization in wireless powered cooperative mobile edge computing systems**

Keywords: mobile edge computing; user cooperation; wireless power transfer; energy consumption; resource management

Cite as: Q. B. Ye, W. D. Lu, S. Hu, et al. Sci China Inf Sci, vol. 64, no.8, pp.182303, 2021. doi: 10.1007/s11432-020-2925-1

### **Deep learning based user scheduling for massive MIMO downlink system**

Keywords: massive MIMO; deep learning; statistical CSI; user scheduling

Cite as: X. X. Yu, J. J. Guo, X. Li, et al. Sci China Inf Sci, vol. 64, no. 8, pp.182304, 2021. doi: 10.1007/s11432-020-2993-6

### **Intelligent cluster routing scheme for flying ad hoc networks**

Keywords: self-organized; unmanned aerial vehicles; UAV; clustering; routing; FANETs

Cite as: A. Khan, S. Khan, A. S. Fazal, et al. Sci China Inf Sci, vol. 64, no. 8, pp.182305, 2021. doi: 10.1007/s11432-019-2984-7

### **Joint resource allocation and power control for radar interference mitigation in multi-UAV networks**

Keywords: multi-UAV network; radar sensing; channel allocation; power control

Cite as: X. Y. Wang, Z. S. Fei Z S, J. X. Huang, et al. Sci China Inf Sci, vol. 64, no. 8, pp.182307, 2021. doi: 10.1007/s11432-020-3133-x

### **Full-duplex two-way AF relaying systems with imperfect interference cancellation in Nakagami-m fading channels**

Keywords: full-duplex; two-way relaying; Nakagami-m fading; outage probability; sum throughput

Cite as: J. P. Tong, C. J. Zhong. Sci China Inf Sci, vol. 64, no. 8, pp.182310, 2021. doi: 10.1007/s11432-020-2935-6

### **Joint optimization of spectral efficiency for cell-free massive MIMO with network-assisted full duplexing**

Keywords: cell-free massive MIMO; network-assisted full duplexing; mode selection; success convex approximations; spectral efficiency

Cite as: X. J. Xia, P. C. Zhu, J. M. Li, et al. Sci China Inf Sci, vol. 64, no. 8, pp.182311, 2021. doi: 10.1007/s11432-020-3139-9

### **The opportunistic relaying scheme design and symbol error rate analysis for PLC networks in smart homes**

Keywords: Smart grid; Smart home; power line communication; opportunistic relaying; symbol error rate

Cite as: L. L. Sun, J. H. Yan, Y. W. Qian, et al. Sci China Inf Sci, vol. 64, no. 8, pp.189301, 2021. doi: 10.1007/s11432-019-2839-y

### **A sparse autoencoder-based approach for cell outage detection in wireless networks**

Keywords: wireless networks; cell outage detection; over-sampling; sparse autoencoder; logistic regression

Cite as: Z. A. Ma, Z. W. Pan, N. Liu. Sci China Inf Sci, vol. 64, no. 8, pp.189302, 2021. doi: 10.1007/s11432-020-2968-1

### **Ergodic rate analysis for full-duplex NOMA networks with energy harvesting**

Keywords: full-duplex; non-orthogonal multiple access; NOMA; simultaneous wireless information and power transfer (SWIPT); ergodic Rate; energy harvesting

Cite as: B. Zhong, L. Chen, Z. J. Tang. Sci China Inf Sci, vol. 64, no. 8, pp.189303, 2021. doi: 10.1007/s11432-020-3099-6

### **Achieving adaptively secure data access control with privacy protection for lightweight IoT devices**

Keywords: IoT; CP-ABE; constant-size ciphertexts; adaptively secure; privacy protection

Cite as: Z. T. Guan, W. T. Yang, L. H. Zhu, et al. Sci China Inf Sci, vol. 64, no. 6, pp.162301, 2021. doi: 10.1007/s11432-020-2957-5

### **Multi-party blind quantum computation protocol with mutual authentication in network**

Keywords: blind quantum computation; mutual identity authentication; load balancer; semi-trust CA; quantum network

Cite as: R.-T. Shan, X. B. Chen, K.-G. Yuan. Sci China Inf Sci, vol. 64, no. 6, pp.162302, 2021. doi: 10.1007/s11432-020-2977-x

### **Fairness-improved and QoS-guaranteed resource allocation for NOMA-based S-IoT network**

Keywords: Non-orthogonal multiple access; Quality of Service; fairness; energy efficiency; Satellite-integrated internet of things

Cite as: J. Jiao, S. Y. Liao, Y. Y. Sun, et al. Sci China Inf Sci, vol. 64, no. 6, pp.169306, 2021. doi: 10.1007/s11432-020-3091-6

### **Resource and trajectory optimization in UAV-powered wireless communication system**

Keywords: UAV; wireless power transfer; trajectory optimization; resource allocation

Cite as: W. D. Lu, P. Y. Si, F. W. Lu, et al. Sci China Inf Sci, vol. 64, no. 4, pp.140304, 2021. doi: 10.1007/s11432-020-3060-4

### **Leveraging partially overlapping channels for intra- and inter-coalition communication in cooperative UAV swarms**

Keywords: UAV swarm; coalition; partially overlapping channel; learning algorithm; game theory

Cite as: K. L. Yao, Y. H. Xu, H. Li, et al. Sci China Inf Sci, vol. 64, no. 4, pp.140305, 2021. doi: 10.1007/s11432-020-3012-3

### **A large-scale clustering and 3D trajectory optimization approach for UAV swarms**

Keywords: large-scale UAV swarms; clustering; super-CH selection; 3D trajectory design

Cite as: T. Ma, H. B. Zhou, B. Qian, et al. Sci China Inf Sci, vol. 64, no. 4, pp.140306, 2021. doi: 10.1007/s11432-020-3013-1

### **Performance analysis of dual-hop UAV relaying systems over mixed fluctuating two-ray and Nakagami-m fading channels**

Keywords: Dual-hop relaying; UAV; fluctuating two-ray; performance analysis; fading channel

Cite as: Y. S. Zhang, J. Y. Zhang, K. P. Peppas, et al. Sci China Inf Sci, vol. 64, no. 4, pp.140307, 2021. doi: 10.1007/s11432-020-2965-9

### **Dynamic relay access for D2D-aided low-latency and high-reliability communications**

Keywords: D2D communications; relay access; low-latency; high-reliability; social ties

Cite as: C. Wu, M. M. Wu, Y. L. Gao, et al. Sci China Inf Sci, vol. 64, no. 2, pp.120302, 2021. doi: 10.1007/s11432-020-2911-0

### **Irregular repetition slotted ALOHA with total transmit power limitation**

Keywords: Density Evolution; Degree Distribution; Coding Theory and Application; Multiple Access; Interference Cancellation; Irregular Repetition Slotted ALOHA; Throughput

Cite as: D. Jia, Z. S. Fei, Y. S. Zhang. Sci China Inf Sci, vol. 64, no. 2, pp.129301, 2021. doi: 10.1007/s11432-019-2728-x

### **Effective age of information in real-time wireless feedback control systems**

Keywords: age of information; communications; feedback control; queuing; throughput; URLLC

Cite as: B. Chang, B. Kizilkaya, L. Y. Li, et al. Sci China Inf Sci, vol. 64, no. 2, pp.120303, 2021. doi: 10.1007/s11432-020-3090-5

## ✧ 通信信号处理

### [Hot Paper |综述] Multichannel adaptive signal detection: basic theory and literature review

Keywords: constant false alarm rate; multichannel signal; signal mismatch; statistical distribution; subspace signal

Cite as: Liu W J, Liu J, Hao C P, et al. Sci China Inf Sci, Vol. 65, no. 2, pp.121301, 2022. doi: 10.1007/s11432-020-3211-8

### Near-field wideband channel estimation for extremely large-scale MIMO

Keywords: XL-MIMO; wideband; near-field; beam split; channel estimation

Cite as: Cui M Y, Dai L L. Sci China Inf Sci, 2023, 66(7): 172303, doi: 10.1007/s11432-022-3654-y

### Asynchronous multilevel bit-interleaved polar-coded modulation

Keywords: polar codes; bit-interleaved coded modulation; multilevel coded modulation; spatial coupling; multi-stage decoding

Cite as: Hu Y Y, Pan Z W, Guan Y L. Sci China Inf Sci, 2023, 66(3): 132304, doi: 10.1007/s11432-021-3497-6

### Self-attention reinforcement learning for multi-beam combining in mmWave 3D-MIMO systems

Keywords: reinforcement learning; deep deterministic policy gradient; self-attention; precoding; combining; millimeter-wave; mmWave; multi-input multi-output; MIMO

Cite as: Huang Y Z, Zhang Z Y, Che J Z, et al. Sci China Inf Sci, 2023, 66(6): 162304, doi: 10.1007/s11432-022-3542-6

### Low-PMEPR rotatable pilot sequences for MIMO-OFDM systems

Keywords: Wi-Fi; MIMO-OFDM; very high throughput long training field; VHT-LTF; rotatable sequence set; peak-to-mean envelope power ratio; PMEPR; phase tracking

Cite as: Zhou Y J, Zhou Z C, Gu Z, et al. Sci China Inf Sci, 2022, 65(12): 229302, doi: 10.1007/s11432-022-3594-8

### Plug-and-Play algorithm for under-sampling Fourier single-pixel imaging

Keywords: Computational imaging; Fourier single-pixel imaging; Plug-and-Play; Image reconstruction; High quality

Cite as: Tian Y, Fu Y, Zhang J. Sci China Inf Sci, 2022, 65(10): 209303, doi: 10.1007/s11432-022-3553-1

### Blind adaptive identification and equalization using bias-compensated NLMS methods

Keywords: blind adaptive identification; equalization; normalized least mean squares algorithm; bias compensation; errors-in-variables

Cite as: Zhang Z, Jia L J, Tao R, et al. Sci China Inf Sci, Vol. 65, no.5, pp.152302, 2022. doi: 10.1007/s11432-020-3216-0

### Robust federated learning for edge-intelligent networks

Keywords: edge-intelligent network; federated learning; imperfect csi; robust design

Cite as: Gao Z H, Chen X M, Shao X D. Sci China Inf Sci, Vol. 65, no.3, pp.132306, 2022. doi: 10.1007/s11432-020-3251-9

### Sparse signal reconstruction via generalized two-stage thresholding

Keywords: sparse representation; compressed sensing; image processing; signal processing; optimization

Cite as: Song H P, Ai Z H, Lai Y P, et al. Sci China Inf Sci, Vol. 65, no.3, pp.139303, 2022. doi: 10.1007/s11432-020-3126-7

### **Precoder and combiner design for dynamically sub-connected hybrid architecture with low-resolution DACs/ADCs in mmWave massive MIMO systems**

Keywords: massive mimo; millimeter wave; low-resolution dacs; low-resolution adcs; hybrid architecture; energy efficiency

Cite as: Jing X R, Li L H, Liu H Q, et al. Sci China Inf Sci, Vol. 65, no.1, pp.119301, 2022. doi: 10.1007/s11432-020-3215-1

### **Secure polar coding for a joint source-channel model**

Keywords: polar codes; joint source-channel model; correlated sources; secret-key generation; wiretap channel

Cite as: H. W. Wang, X. F. Tao, H. C. Wu, et al. Sci China Inf Sci, vol. 64, no. 11, pp. 212301, 2021. doi: 10.1007/s11432-020-3119-3

### **Self-interference cancellation for cooperative jamming communications with nonideal alignment and channel equalization**

Keywords: idealities. cooperative jamming; self-interference; time-frequency alignment; channel equalization; non-idealities.

Cite as: W. B. Guo, Y. M. He, H. Z. Zhao, et al. Sci China Inf Sci, vol. 64, no. 11, pp. 212302, 2021. doi: 10.1007/s11432-020-2970-y

### **An iterative BiGAMP-based receiver for coded massive MIMO systems with low-resolution ADCs**

Keywords: massive mimo; low-resolution adcs; iterative receiver; bigamp; partially active

Cite as: Sun Y, Jiang M, Zhao C M. Sci China Inf Sci, 2021, vol. 64, no.11, pp.219302, doi: 10.1007/s11432-020-3050-9

### **Uplink transmission design for crowded correlated cell-free massive MIMO-OFDM systems**

Keywords: APSP set allocation; cell-free massive MIMO-OFDM; correlated channels; crowded scenarios; power control

Cite as: J. Y. Gao, Y. P. Wu, Y. J. Wang, et al. Sci China Inf Sci, vol. 64, no. 8, pp.182309, 2021. doi: 10.1007/s11432-020-3103-3

### **Theoretical analysis of PAM-N and M-QAM BER computation with single-sideband signal**

Keywords: N-level pulse amplitude modulation; PAM-N; M-ary quadrature amplitude modulation; M-QAM; BER computation; single-sideband; SSB; Kramers-Kronig receiver

Cite as: D. X. Lu, X. Zhou, Y. Q. Yang, et al. Sci China Inf Sci, vol. 64, no. 8, pp.182312, 2021. doi: 10.1007/s11432-020-3025-4

### **Convolution theorem involving n-dimensional windowed fractional Fourier transform**

Keywords: Fractional Fourier transform; Windowed fractional Fourier transform; Convolution product; Convolution theorem; Convolution equations

Cite as: W. B. Gao, B. Z. Li. Sci China Inf Sci, vol. 64, no. 6, pp.169302, 2021. doi: 10.1007/s11432-020-2909-5

### **MMSE channel estimation for two-port demodulation reference signals in new radio**

Keywords: OFDM; channel estimation; new radio; minimum mean square error; demodulation reference signal; multiple antennas

Cite as: D. J. Kong, X.-G. Xia, P. Liu, et al. Sci China Inf Sci, vol. 64, no. 6, pp.169303, doi: 10.1007/s11432-020-3011-7

## ✧ 信息论与编码

### [综述] **Quantum-safe cryptography: crossroads of coding theory and cryptography**

Keywords: post-quantum cryptography; lattice-based cryptography; code-based cryptography; information-theoretic security; lattice reduction; lattice codes; linear codes

Cite as: Wang J B, Liu L, Lyu S X, et al. Sci China Inf Sci, Vol. 65, no.1, pp.111301, 2022. doi: 10.1007/s11432-021-3354-7

### **A fast parallel SC-Fano decoding algorithm for PAC codes**

Keywords: PAC codes; parallel decoding; Fano decoding; complexity

Cite as: Wu Y Z, Li L, Fan P Z. Sci China Inf Sci, 2023, 66(5): 152301, doi: 10.1007/s11432-022-3498-8

### **Reduced-search guessing random additive noise decoding of polar codes**

Keywords: polar codes; GRAND; ORBGRAND; LGRAND; adaptive LGRAND

Cite as: Wang K F, Wei Y J, Chen Z Y, et al. Sci China Inf Sci, 2023, 66(2): 129301, doi: 10.1007/s11432-022-3623-y

### **Scalable local reconstruction code design for hot data reads in cloud storage systems**

Keywords: cloud storage systems; erasure code; scalable local reconstruction code; degraded reads; local maximum throughput

Cite as: Zhang Z K, Gu S S, Zhang Q Y. Sci China Inf Sci, 2022, 65(12): 222303, doi: 10.1007/s11432-021-3421-6

### **Efficient polar coding scheme and implementation with shared information bits**

Keywords: polar codes; successive cancellation decoding; shared information bits; Fast-SSC decoder; polar codes with memory

Cite as: Zhou W Y, Zhou X F, Shen Y F, et al. Sci China Inf Sci, 2022, 65(10): 209304, doi: 10.1007/s11432-021-3474-8

### **Explicit construction of minimum bandwidth rack-aware regenerating codes**

Keywords: regenerating code; rack-aware storage; clustered storage; repair bandwidth; erasure code

Cite as: Zhou L Y, Zhang Z F. Sci China Inf Sci, 2022, Vol. 65, no. 7, pp. 179301, doi: 10.1007/s11432-021-3304-6

### **Error exponent for concatenated codes in DNA data storage under substitution errors**

Keywords: dna data storage; substitution errors; concatenated codes; error exponent; polar codes

Cite as: Shi Y X, Shao S, Zhang X H, et al. Sci China Inf Sci, Vol. 65, no.5, pp.159304, 2022. doi: 10.1007/s11432-021-3394-2

### **A correlation-breaking interleaving of polar codes in concatenated systems**

Keywords: Polar codes; SC decoding; BP decoding; interleaving; code concatenation

Cite as: Meng Y, Li L P, Zhang C. Sci China Inf Sci, vol. 64, no. 10, pp. 209304, 2021. doi: 10.1007/s11432-019-2904-0

### **Belief propagation list bit-flip decoder for polar codes**

Keywords: polar codes; belief propagation; bit-flip; list decoder

Cite as: Y. Y. Yang, Y. Y. Hu, Z. W. Pan. et al. Sci China Inf Sci, vol. 64, no. 9, pp.192306, 2021. doi: 10.1007/s11432-019-2801-6

## ✧ 雷达技术与遥感图像处理

### [综述] **Multimodal hyperspectral remote sensing: an overview and perspective**

Keywords: hyperspectral image processing; multitemporal hyperspectral imaging; hyperspectral video imaging; hyperspectral stereo imaging; multimodal hyperspectral remote sensing imaging

Cite as: Y. Gu, T. Liu, G. Gao et al. Sci China Inf Sci, vol. 64, no. 2, pp.121301, 2021. doi: 10.1007/s11432-020-3084-1

### [综述] **From single- to multi-modal remote sensing imagery interpretation: a survey and taxonomy**

Keywords: multimodal; remote sensing; image interpretation; feature fusion; co-learning

Cite as: Sun X, Tian Y, Lu W X, et al. Sci China Inf Sci, 2023, 66(4): 140301. <https://doi.org/10.1007/s11432-022-3588-0>

### [综述] **A survey on hyperspectral image restoration: from the view of low-rank tensor approximation**

Keywords: hyperspectral image; image restoration; low-rank tensor approximation; multisource fusion; remote sensing

Cite as: Liu N, Li W, Wang Y J, et al. Sci China Inf Sci, 2023, 66(4): 140302. <https://doi.org/10.1007/s11432-022-3609-4>

### **A compact MIMO automotive radar using phase-aligned daisy-chain cascading topology and elevation compensation for 2D angle estimation**

Keywords: frequency-modulated continuous-wave radar prototype; FMCW; multiple-input-multiple-output; MIMO; phase-alignment daisy-chained cascading topology; 2D antenna design; elevation compensation

Cite as: Zhou R, Chen J X, Huang Y, et al. Sci China Inf Sci, 2023, 66(6): 162305, doi: 10.1007/s11432-022-3613-6

### **Persymmetric adaptive detection of range-spread targets in subspace interference plus Gaussian clutter**

Keywords: adaptive detection; persymmetry; structured interference; constant false alarm rate; Rao test

Cite as: Jian T, He J, Liu Y, et al. Sci China Inf Sci, 2023, 66(5): 152306, doi: 10.1007/s11432-022-3540-5

### **Learning the external and internal priors for multispectral and hyperspectral image fusion**

Keywords: multispectral and hyperspectral image fusion; external and internal prior learning; high-resolution hyperspectral imaging

Cite as: Li S T, Dian R W, Liu H B. Sci China Inf Sci, 2023, 66(4): 140303, <https://doi.org/10.1007/s11432-022-3610-5>

### **Wide-beam sar autofocus based on blind resampling**

Keywords: synthetic aperture radar; SAR; wide-beam; autofocus; nonlinear chirp scaling; NCS; resampling

Cite as: Chen J L, Yu H W. Sci China Inf Sci, 2023, 66(4): 140304, <https://doi.org/10.1007/s11432-022-3574-7>

### **MFVNet: deep adaptive fusion network with multiple field-of-views for remote sensing image semantic segmentation**

Keywords: semantic segmentation; remote sensing image; field-of-view; adaptive fusion; convolutional neural network

Cite as: Li Y S, Chen W, Huang X, et al. Sci China Inf Sci, 2023, 66(4): 140305, <https://doi.org/10.1007/s11432-022-3599-y>

### **Detecting building changes with off-nadir aerial images**

Keywords: change detection; high-resolution imagery; multi-task learning; off-nadir imagery; remote sensing dataset

Cite as: Pang C, Wu J, Ding J, et al. Sci China Inf Sci, 2023, 66(4): 140306, <https://doi.org/10.1007/s11432-022-3691-4>

### **AIR-PV: a benchmark dataset for photovoltaic panels extraction in optical remote sensing imagery**

Keywords: photovoltaic panels extraction; remote sensing; benchmark dataset; deep learning; large scale

Cite as: Yan Z Y, Wang P J, Xu F, et al. Sci China Inf Sci, 2023, 66(4): 140307, <https://doi.org/10.1007/s11432-022-3663-1>

### **Multi-layer composite autoencoders for semi-supervised change detection in heterogeneous remote sensing images**

Keywords: heterogeneous images; neural networks; composite autoencoders; semi-supervised change detection; remote sensing

Cite as: Shi J, Wu T C, Yu H W, et al. Sci China Inf Sci, 2023, 66(4): 140308, <https://doi.org/10.1007/s11432-022-3693-0>

### **A robust tracking method focusing on target fluctuation and maneuver characteristics**

Keywords: radar; bird targets; echo power fluctuation; maneuver; multitarget tracking

Cite as: Tian W M, Fang L L, Wang R, et al. Sci China Inf Sci, 2022, 65(11): 212302, doi: 10.1007/s11432-021-3438-7

### **Automatic target recognition combining angular diversity and time diversity for multistatic passive radar**

Keywords: automatic target recognition; angular diversity; multistatic passive radar; radar cross section; time diversity

Cite as: Cao X M, Yi J X, Gong Z P, et al. Sci China Inf Sci, 2022, Vol. 65, no. 7, pp. 179303, doi: 10.1007/s11432-021-3422-6

### **Range-angle-dependent beamforming for FDA-MIMO radar using oblique projection**

Keywords: fda-mimo radar; range-angle-dependent beamforming; weight vector orthogonal decomposition; oblique projection; interference mitigation

Cite as: Lan L, Liao G S, Xu J W, et al. Sci China Inf Sci, Vol. 65, no.5, pp.152305, 2022. doi: 10.1007/s11432-020-3250-7

### **Constant modulus sequence set design with low weighted integrated sidelobe level in spectrally crowded environments**

Keywords: weighted integrated sidelobe level; finite alphabet case; inexact alternating direction penalty method; spectral congestion; constant modulus sequence set

Cite as: Bu Y, Qiu H, Fan T, et al. Sci China Inf Sci, Vol. 65, no.5, pp.159303, 2022. doi: 10.1007/s11432-020-3249-1

### **Estimation of vector miss distance for complex objects based on scattering center model**

Keywords: vector miss distance; scattering center model; distributed scattering center; sliding scattering center; motion parameters estimation

Cite as: J. Wu, K. Y. Guo, B. Y. Wu, et al. Sci China Inf Sci, vol. 64, no. 4, pp.149301, 2021. doi: 10.1007/s11432-019-2755-3

### **Tomographic SAR imaging with large elevation aperture: a P-band small UAV demonstration**

Keywords: uav sar tomography; large elevation aperture; super-resolution; p-band

Cite as: Zeng T, Liu M K, Wang Y, et al. Sci China Inf Sci, Vol. 65, no.3, pp.132303, 2022. doi: 10.1007/s11432-021-3391-2

### **Suppression of dense false target jamming for stepped frequency radar in slow time domain**

Keywords: stepped frequency; dense false target jamming; coherent accumulation; slow time domain; matched filtering

Cite as: Zeng L, Zhang Z J, Wang Y-L, et al. Sci China Inf Sci, Vol. 65, no.3, pp.139301, 2022. doi:



10.1007/s11432-020-3229-4

### **Collaborative representation with background purification and saliency weight for hyperspectral anomaly detection**

Keywords: hyperspectral; anomaly detection; background purification; collaborative representation; saliency weight

Cite as: Hou Z F, Li W, Tao R, et al. Sci China Inf Sci, Vol. 65, no.1, pp.112305, 2022. doi: 10.1007/s11432-020-2915-2

### **L-distribution for multilook polarimetric SAR data and its application in ship detection**

Keywords: generalized Gamma distribution; L-distribution; polarimetric SAR; ship detection; optimal polarization detector; OPD; multilook polarimetric whitening filter; MPWF

Cite as: T. Liu, T. Tang, Z. Y. Yang, et al. Sci China Inf Sci, vol. 64, no. 12, pp.222304, 2021. doi: 10.1007/s11432-019-2779-8

### **Multistatic ground-based differential interferometric MIMO radar for 3D deformation measurement**

Keywords: GB-MIMO radar; 3-D deformation measurement; multi-static radar system; differential interferometry; GB-SAR

Cite as: C. Hu, Y. K. Deng, W. M. Tian. Sci China Inf Sci, vol. 64, no. 12, pp.227301, 2021. doi: 10.1007/s11432-021-3352-y

### **Extended scintillation phase gradient autofocus in future spaceborne P-band SAR mission**

Keywords: synthetic aperture radar; SAR; ionospheric scintillation; scintillation phase error; SPE; extended scintillation phase gradient autofocus; ESPGA; spaceborne P-band SAR

Cite as: Y. F. Ji, Z. Dong, Y. S. Zhang, et al. Sci China Inf Sci, vol. 64, no. 11, pp. 212303, 2021. doi:

10.1007/s11432-019-2797-4

### **Two dimensional sparse signal reconstruction via 2D inverse-free sparse Bayesian learning**

Keywords: compressive sensing; 2d sparse signal recovery; ssr; sparse bayesian learning; inverse synthetic aperture radar imaging; isar; expectation-maximization; em

Cite as: Zhang S H, Liu Y X, Li X. Sci China Inf Sci, 2021, vol. 64, no.11, pp. 219303, doi: 10.1007/s11432-020-3051-9

### **Localization deception performance of FDA signals under passive bi-satellite reconnaissance**

Keywords: localization deception; passive bi-satellite reconnaissance; frequency diverse array; FDA; Cramer-Rao bound; CRB; time difference of arrival; TDOA; frequency difference of arrival; FDOA

Cite as: H. L. Guan, S. S. Zhang, W.-Q. Wang. Sci China Inf Sci, vol. 64, no. 9, pp.192305, 2021. doi:

10.1007/s11432-019-2773-1

### **SAR image change detection method based on PPNN**

Keywords: SAR image change detection; multi-feature; probabilistic neural network; parallel probabilistic neural network

Cite as: G. L. Nie, G. S. Liao, C. Zeng. Sci China Inf Sci, vol. 64, no. 8, pp.189304, 2021. doi: 10.1007/s11432-019-2865-5

### **Reciprocal translation between SAR and optical remote sensing images with cascaded-residual adversarial networks**

Keywords: synthetic aperture radar; generative adversarial network (GAN); image translation; cascaded residual connection; Frechet inception distance

Cite as: S. L. Fu, F. Xu, Y.-Q. Jin. Sci China Inf Sci, vol. 64, no. 2, pp.122301, 2021. doi: 10.1007/s11432-020-3077-5

### **Comprehensive analysis of polarimetric radar cross-section parameters for insect body width and length estimation**

Keywords: insect; entomological radar; polarimetric RCS parameters; body width estimation; body length estimation

Cite as: W. D. Li, C. Hu, R. Wang, et al. Sci China Inf Sci, vol. 64, no. 2, pp.122302, 2021. doi: 10.1007/s11432-020-3010-6

### **Off-grid correction for improving scatterer localization performance in compressive sampling SAR tomography**

Keywords: synthetic aperture radar tomography; SAR tomography; scatterer detection; compressive sensing; off-grid; non-linear least squares; NLS

Cite as: X. X. Zhu, A. X. Yu, Z. Dong, et al. Sci China Inf Sci, vol. 64, no. 2, pp.129302, 2021. doi: 10.1007/s11432-020-2926-7

### **Accurate scattering centers modeling for complex conducting targets based on induced currents**

Keywords: scattering center model; induced currents; complex target; time-frequency representation; TFR; parameter estimation

Cite as: G. L. Xiao, K. Y. Guo, B. Y. Wu, et al. Sci China Inf Sci, vol. 64, no. 2, pp.129303, 2021. doi: 10.1007/s11432-019-2746-4

### **A 77 GHz FMCW MIMO radar system based on 65nm CMOS cascaded 2T3R transceiver**

Keywords: Millimeter-wave radar; frequency modulated continue-wave; FMCW; MIMO; Capon beamformer; series-fed patch antenna

Cite as: T. K. Ma, Z. P. Chen, J. X. Wu, et al. Sci China Inf Sci, vol. 64, no. 1, pp.114301, 2021. doi: 10.1007/s11432-019-1511-5

## **◇ 电磁场与微波技术**

### **Low-loss wide-bandwidth planar transmission line with a laminated conductor**

Keywords: coplanar waveguide; laminated conductor; conductor loss; skin effect; silicon-based technology; wide-bandwidth

Cite as: Ning K, Li X-C, Shao Y, et al. Sci China Inf Sci, 2023, 66(5): 152304, doi: 10.1007/s11432-022-3564-2

### **A K-/Ka-band planar shared-aperture beam-scanning array with a high-isolation for the emerging mm-Wave shared-aperture terminals**

Keywords: shared-aperture; high isolation; beam-scanning; substrate-integrated coaxial line; substrate-integrated double line

Cite as: Guo Z-J, Hao Z-C, Miao Z-W, et al. Sci China Inf Sci, 2023, 66(5): 152305, doi: 10.1007/s11432-022-3587-8

### **Diverse terahertz wavefront manipulations empowered by the spatially interleaved metasurfaces**

Keywords: terahertz; wavefront manipulations; metasurfaces; spatial interleaving; onformation optics

Cite as: Li J T, Yue Z, Li J, et al. Sci China Inf Sci, 2023, 66(3): 132301, doi: 10.1007/s11432-022-3499-4

### **Geometric constraints based 3D reconstruction method of tomographic SAR for buildings**

Keywords: tomographic SAR; 3D reconstruction of buildings; geometric constraints; back projection; compressed sensing

Cite as: Han D, Jiao Z K, Zhou L J, et al. Sci China Inf Sci, 2023, 66(1): 112301, doi: 10.1007/s11432-022-3521-0

### **Origami-inspired frequency selective surface with large bandwidth modulation range based on electromagnetically induced transparency effect**

Keywords: Frequency selective surface; origami; mode coupling; electromagnetically induced transparency; bandwidth modulation

Cite as: Chen S H, Pan T S, Wang W, et al. Sci China Inf Sci, 2022, 65(10): 209301, doi: 10.1007/s11432-021-3452-5

### **One-bit quantization is good for programmable coding metasurfaces**

Keywords: metasurfaces; metamaterials; information capacity; signal representation; one-bit coding metasurface

Cite as: Shuang Y, Zhao H T, Wei M L, et al. One-bit quantization is good for programmable coding metasurfaces. Sci China Inf Sci, 2022, Vol. 65, no. 7, pp. 172301, doi: 10.1007/s11432-022-3471-9

### **On the uniqueness of virtual substrate for metasurface in a dielectric half-space**

Keywords: virtual substrate; periodic metallic elements; mathematical limit; relative permittivity; boundary condition

Cite as: Liu X B, Xue W, Chen X M, et al. Sci China Inf Sci, Vol. 65, no.1, pp.112302, 2022. doi: 10.1007/s11432-020-3230-4

### **Design of low-profile array antenna working at 110 GHz based on digital coding characterization**

Keywords: low-profile antenna array; digital coding characterization; adaptive wireless communication; dynamically tunable; nematic liquid crystals; NLCs

Cite as: Wang Q, Jiang W X, Shen H Y. Sci China Inf Sci, vol. 64, no. 10, pp. 209303, 2021. doi: 10.1007/s11432-020-3165-8

### **Anisotropic and nonlinear metasurface for multiple functions**

Keywords: multi-function; metasurface; nonlinear; anisotropic; polarization

Cite as: Luo Z J, Ren X Y, Wang Q, et al. Sci China Inf Sci, 2021, vol.64, no.9, pp. 192301, doi: 10.1007/s11432-021-3264-9

### **Efficient coupling of evanescent waves in rectangular waveguides based on ultrathin planar capacitive metasurfaces**

Keywords: cutoff frequency; capacitive metasurface; evanescent wave; miniaturized components; rectangular waveguide

Cite as: D. Yi, M.-C. Tang, M. Li, et al. Sci China Inf Sci, vol. 64, no. 8, pp.182313, 2021. doi: 10.1007/s11432-020-3085-6

## **◇ 网络安全**

### **[综述]On the revolution of the information network development paradigm**

Keywords: information network development paradigm; separation of technical systems and supporting environment; polymorphic network; PINet

Cite as: Wu J X. Sci China Inf Sci, 2022, 65(11): 213301, doi: 10.1007/s11432-021-3480-9

### **[综述]A survey on cryptographic techniques for protecting big data security: present and forthcoming**

Keywords: big data security; cryptographic techniques; ciphertext-based data sharing and computing; authenticated encryption; functional encryption; homomorphic encryption; secure multi-party computing

Cite as: Lu S Q, Zheng J H, Cao Z F, et al. Sci China Inf Sci, 2022, 65(10): 201301, doi: 10.1007/s11432-021-3393-x

### **[Hot Paper!] Efficient privacy-preserving user authentication scheme with forward secrecy for industry 4.0**

Keywords: industry 4.0; wireless sensor networks; password authentication; forward secrecy; offline dictionary attack

Cite as: Wang C Y, Wang D, Xu G A, et al. Sci China Inf Sci, Vol. 65, no.1, pp.112301, 2022. doi: 10.1007/s11432-020-2975-6

### **Reinforcement learning of non-additive joint steganographic embedding costs with attention mechanism**

Keywords: information hiding; non-additive steganography; steganalysis; cost learning; image processing

Cite as: Tang W X, Li B, Li W X, et al. Sci China Inf Sci, 2023, 66(3): 132305, doi: 10.1007/s11432-021-3453-5

### **A nonprofiled side-channel analysis based on variational lower bound related to mutual information**

Keywords: side-channel analysis; nonprofiled method; variational lower bound; mutual information; neural networks

Cite as: Zhang C, Lu X J, Cao P, et al. Sci China Inf Sci, 2023, 66(1): 112302, doi: 10.1007/s11432-021-3451-1

### **Enhanced time-expanded graph for space information network modeling**

Keywords: enhanced time-expanded graph; space information network; network modeling; heterogeneous resource modeling; joint scheduling

Cite as: Li J D, Wang P, Li H Y, et al. Sci China Inf Sci, 2022, Vol. 65, no. 9, pp.192301, doi: 10.1007/s11432-020-3202-2

### **Secret key generation over a Nakagami-m fading channel with correlated eavesdropping channel**

Keywords: physical layer security; physical layer secret key generation; Nakagami-m fading; correlated eavesdropping channel; secret key capacity

Cite as: Gong S X, Tao X F, Li N, et al. Sci China Inf Sci, 2022, Vol. 65, no. 9, pp.192304, doi: 10.1007/s11432-021-3353-5

### **Secure coordinated direct and untrusted relay transmissions via interference engineering**

Keywords: physical layer security; untrusted relay; interference exploitation; coordinated transmission; ergodic secrecy rate

Cite as: Lv L, Li Z, Ding H Y, et al. Sci China Inf Sci, 2022, Vol. 65, no. 8, pp. 182304, doi: 10.1007/s11432-021-3259-0

### **Intelligent networking in adversarial environment: challenges and opportunities**

Keywords: intelligent networking; adversarial; attacks; defense; security

Cite as: Zhao Y, Xu K, Li Q, et al. Sci China Inf Sci, 2022, Vol. 65, no. 7, pp. 170301, doi: 10.1007/s11432-021-3463-9

### **Non-IID federated learning via random exchange of local feature maps for textile IIoT secure computing**

Keywords: federated learning; secure computing; industrial Internet of Things (IIoT); machine vision; texture encoding; image classification; Non-IID

Cite as: Peng B, Chi M M, Liu C. Sci China Inf Sci, 2022, Vol. 65, no. 7, pp. 170302, doi: 10.1007/s11432-021-3423-9

### **VulnerGAN: a backdoor attack through vulnerability amplification against machine learning-based network intrusion detection systems**

Keywords: AI security; adversarial sample; data poisoning; network intrusion detection; generative adversarial network

Cite as: Liu G R, Zhang W Z, Li X J, et al. Sci China Inf Sci, 2022, Vol. 65, no. 7, pp. 170303, doi: 10.1007/s11432-021-3455-1

### **Reliable resource allocation with RF fingerprinting authentication in secure IoT networks**

Keywords: user authentication; Internet of things; convolutional neural network; RF fingerprinting; NP-hard optimization problem

Cite as: Wu W W, Hu S, Lin D, et al. Sci China Inf Sci, 2022, Vol. 65, no. 7, pp. 170304, doi: 10.1007/s11432-021-3284-y

### **Defensive deception framework against reconnaissance attacks in the cloud with deep reinforcement learning**

Keywords: cyber deception defense; artificial intelligence; cloud security; reconnaissance attack; deep reinforcement learning; deception strategy

Cite as: Li H R, Guo Y F, Huo S M, et al. Sci China Inf Sci, 2022, Vol. 65, no. 7, pp. 170305, doi: 10.1007/s11432-021-3462-4

### **Certified defense against patch attacks via mask-guided randomized smoothing**

Keywords: certified defense; adversarial patch; patch localization; randomized smoothing; joint voting

Cite as: Zhang K, Zhou H, Bian H Y, et al. Sci China Inf Sci, 2022, Vol. 65, no. 7, pp. 170306, doi: 10.1007/s11432-021-3457-7

### **ACCEL: an efficient and privacy-preserving federated logistic regression scheme over vertically partitioned data**

Keywords: vertically federated learning; privacy-preserving; logistic regression; symmetric homomorphic encryption; efficiency

Cite as: Zhao J Q, Zhu H, Wang F W, et al. Sci China Inf Sci, 2022, Vol. 65, no. 7, pp. 170307, doi: 10.1007/s11432-021-3415-1

### **Post quantum secure fair data trading with deterability based on machine learning**

Keywords: designated verifier signatures; zk-SNARKs; double authentication preventing signatures; lattice; machine learning

Cite as: Liu J H, Yu Y, Bi H L, et al. Sci China Inf Sci, 2022, Vol. 65, no. 7, pp. 170308, doi: 10.1007/s11432-021-3441-y

### **Lattice-based group encryptions with only one trapdoor**

Keywords: lattice cryptography; group encryptions; lattice trapdoors; accumulators; zero-knowledge

Cite as: Pan J, Zhang J, Zhang F G, et al. Sci China Inf Sci, Vol. 65, no.5, pp.152304, 2022. doi: 10.1007/s11432-020-3226-6

### **Development paradigms of cyberspace endogenous safety and security**

Keywords: reconfigurable architectures; energy efficiency; cryptographic accelerator; flexibility; side channel analysis

Cite as: Wu J X. Sci China Inf Sci, Vol. 65, no.5, pp.156301, 2022. doi: 10.1007/s11432-021-3379-2

### **A detailed analysis of primal attack and its variants**

Keywords: cryptanalysis; lattice-based cryptography; learning with errors problem; primal attack; unique-SVP

Cite as: X. Zhang, Z. X. Zheng, X. Y. Wang. Sci China Inf Sci, vol. 65, no. 3, pp.132301, 2022. doi: 10.1007/s11432-020-2958-9

### **WARX: efficient white-box block cipher based on ARX primitives and random MDS matrix**

Keywords: white-box cryptography; block cipher; design; addition/rotation/XOR; efficiency improvement

Cite as: J. Liu, R. J. Vincent, Y. P. Hu, J. Chen, B. C. Wang. Sci China Inf Sci, vol. 65, no. 3, pp. 132302, 2022. doi: 10.1007/s11432-020-3105-1

### **Low-complexity and high-performance receive beamforming for secure directional modulation networks against an eavesdropping-enabled full-duplex attacker**

Keywords: malicious attacker; secure; directional modulation; secrecy rate; receive beamforming; null-space projection

Cite as: Teng Y, Li J Y, Huang M X, et al. Sci China Inf Sci, Vol. 65, no.1, pp.119302, 2022. doi: 10.1007/s11432-020-3232-4

### **Functional signatures: new definition and constructions**

Keywords: cloud computation security; digital signature; functional signature; non-interactive zero-knowledge proof; e-commerce

Cite as: Q. W. Guo, Q. Huang, S. Ma, et al. Sci China Inf Sci, vol. 64, no. 12, pp.222301, 2021. doi: 10.1007/s11432-019-2855-3

### **Differential game-based analysis of multi-attacker multi-defender interaction**

Keywords: differential game; multi-attacker to multi-defender interaction; optimal control theory; Hamilton function; equilibrium strategy

Cite as: Q. Y. Gao, H. C. Wu, Y. F. Zhang, et al. Sci China Inf Sci, vol. 64, no. 12, pp.222302, 2021. doi: 10.1007/s11432-020-3228-8

### **Secure network coding from secure proof of retrievability**

Keywords: Network Coding; Proof of Retrievability; Random Oracle; Provable Security; Cloud Storage

Cite as: J. Y. Chang, B. L. Shao, Y. Y. Ji, et al. Sci China Inf Sci, vol. 64, no. 12, pp.229301, 2021. doi: 10.1007/s11432-020-2997-0

### **Proactive eavesdropping of wireless powered suspicious interference networks**

Keywords: legitimate surveillance; proactive eavesdropping; wireless powered suspicious interference networks; successive interference cancellation; physical layer security

Cite as: Xu D, Zhu H B. Sci China Inf Sci, vol. 64, no. 12, pp. 229305, 2021. doi: 10.1007/s11432-020-2992-3

### **A comprehensive evaluation of diversity systems based on mimic defense**

Keywords: cyberspace security; software diversity; mimic defense; web server system; quantitative evaluation

Cite as: Tong Q, Guo Y F. Sci China Inf Sci, vol. 64, no. 12, pp. 229304, 2021. doi: 10.1007/s11432-020-3008-1

### **An incentive-compatible rational secret sharing scheme using blockchain and smart contract**

Keywords: rational secret sharing; game theory; sequential equilibrium; incentive-compatible; smart contract

Cite as: Z. R. Chen, Y. L. Tian, C. G. Peng. "An incentive-compatible rational secret sharing scheme using blockchain and smart contract". Sci China Inf Sci, vol. 64, no. 10, pp.202301, 2021. doi: 10.1007/s11432-019-2858-8

### **Secure communication in wireless powered communication networks with energy accumulation**

Keywords: Wireless powered communication network; secure communication; eavesdropping; energy accumulation; energy harvesting

Cite as: Xu D. Sci China Inf Sci, vol. 64, no. 10, pp. 209301, 2021. doi: 10.1007/s11432-019-2840-2

### **A novel identity resolution system design based on Dual-Chord algorithm for industrial Internet of Things**

Keywords: industrial Internet of Things; identity resolution; distributed Hash table; small world model

Cite as: R. C. Xie, Z. Y. Wang, F. R. Yu, et al. Sci China Inf Sci, vol. 64, no. 8, pp.182301, 2021. doi: 10.1007/s11432-020-3016-x

### **Cetus: an efficient symmetric searchable encryption against file-injection attack with SGX**

Keywords: searchable encryption; SGX technique; file injection attack; forward/toward privacy; cloud databases

Cite as: Y. Y. Huang, S. Y. Lv, Z. L. Liu, et al. Sci China Inf Sci, vol. 64, no. 8, pp.182314, 2021. doi: 10.1007/s11432-020-3039-x

### **Intelligent resource allocation in mobile blockchain for privacy and security transactions: a deep reinforcement learning based approach**

Keywords: mobile blockchain; deep reinforcement learning; mobile edge computing; power allocation; bandwidth allocation

Cite as: Z. L. Ning, S. M. Sun, X. J. Wang, et al. Sci China Inf Sci, vol. 64, no. 6, pp.162303, 2021. doi: 10.1007/s11432-020-3125-y

### **Ciphertext-policy attribute-based proxy re-encryption via constrained PRFs**

Keywords: Cloud Computing; Access Control; Constrained PRF; ciphertext-policy attribute-based proxy re-encryption; proxy re-encryption; attribute-based proxy re-encryption

Cite as: Z. P. Li, V. Sharma, C. G. Ma, et al. Sci China Inf Sci, vol. 64, no. 6, pp.169301, 2021. doi: 10.1007/s11432-019-2856-8

### **On efficient key tag writing in RFID-enabled IoT**

Keywords: RFID; Key tag writing; time efficiency; IoT; multiple groups

Cite as: P. F. Zhang, H. Liu, J. H. Yu. Sci China Inf Sci, vol. 64, no. 6, pp.169305, doi: 10.1007/s11432-019-2891-3

### **Robustness of interdependent multi-model addressing networks**

Keywords: multi-model addressing; interdependent networks; robustness; percolation; cascade of failures

Cite as: W. T. Han, L. Tian, F. Y. Zhang, et al. Sci China Inf Sci, vol. 64, no. 6, pp.169304, 2021. doi: 10.1007/s11432-019-2892-0

## **◇ 光通信**

### **[综述] A review of machine learning-based failure management in optical networks**

Keywords: machine learning; artificial intelligence; failure management; optical network

Cite as: Wang D S, Zhang C Y, Chen W B, et al. Sci China Inf Sci, 2022, 65(11): 211302, doi: 10.1007/s11432-022-3557-9

### **Clipping discrete multi-tone for peak-power-constraint IM/DD optical systems**

Keywords: discrete multi-tone; peak-to-average power ratio; peak-power constraint; clipping-noise cancellation; intensity-modulation optical systems; direct-detection optical systems

Cite as: Zhou J, Li L C, He J L, et al. Sci China Inf Sci, 2023, 66(5): 152302, doi: 10.1007/s11432-022-3555-y

### **Photonics-based high-speed long-distance fiber-wireless-integration communication at the W-band**

Keywords: beyond 5G; mm-wave communication; W band; photonics-based; long-distance communication

Cite as: Li W P, Yu J J, Wang F Y, et al. Sci China Inf Sci, 2023, 66(2): 127301, doi: 10.1007/s11432-022-3625-8

### **Optical time-series signals classification based on data augmentation for small sample**

Keywords: data augmentation; time-series signals; convolutional neural network; deep learning; optical fiber sensing; fiber Bragg grating

Cite as: Zhang X Z, Sun H N, Jiang J F, et al. Sci China Inf Sci, 2022, 65(12): 229303, doi: 10.1007/s11432-022-3615-1

### **Optical-pulse-coding phase-sensitive OTDR with mismatched filtering**

Keywords: mismatched filtering; phase-sensitive optical time-domain reflectometry; optical fiber sensing; optical pulse coding; least-squares criterion

Cite as: Liang Y X, Wang Z N, Lin S T, et al. Sci China Inf Sci, 2022, Vol. 65, no. 9, pp.192303, doi: 10.1007/s11432-021-3329-6

### **Demonstration of record-high 352-Gbps terahertz wired transmission over hollow-core fiber at 325 GHz**

Keywords: THz communication; THz hollow-core fiber; optical-THz-optical communication; advanced multi-dimension multiplexing techniques; THz in-depth coverage

Cite as: M. Zhu, J. Zhang, J. J. Yu, et al. Sci China Inf Sci, vol. 65, no. 2, pp. 127301, 2022. doi: 10.1007/s11432-021-3361-5

### **Time-slot multiplexing based bandwidth enhancement for fiber distributed acoustic sensing**

Keywords: optical fiber; distributed acoustic sensing; distance bandwidth product; backscattering enhanced fiber; time-slot multiplexing

Cite as: Li H, Fan C Z, Liu T, et al. Sci China Inf Sci, Vol. 65, no.1, pp.119303, 2022. doi: 10.1007/s11432-020-3199-x

### **Spatial resolution improved OFDM-BOTDA utilizing frequency-division-multiplexed Brillouin phase/gain spectrum**

Keywords: nonlinear fiber optics; stimulated Brillouin scattering; OFDM; BOTDA; BPS; BGS

Cite as: Zhao C, Wu H, Tang M. Sci China Inf Sci, vol. 64, no. 12, pp. 229302, 2021. doi: 10.1007/s11432-020-3095-1

### **Orbital angular momentum multiplexing communication system over atmospheric turbulence with K-best detection**

Keywords: orbital angular momentum; atmospheric turbulence; K-best detection; MMSE-SQRD preprocessing; WPE algorithm

Cite as: Y. M. Ge, L. Wu, C. Zhang, et al. Sci China Inf Sci, vol. 64, no. 9, pp.192302, 2021. doi: 10.1007/s11432-019-2918-7



## ✧ 卫星通信

### [综述] **Applications and prospects of artificial intelligence in covert satellite communication: a review**

Keywords: satellite communication; covert communication; secure communication; low probability of detection; artificial intelligence; machine learning

Cite as: Lu K, Liu H, Zeng L, et al. Sci China Inf Sci, 2023, 66(2): 121301, doi: 10.1007/s11432-022-3566-4

### [综述] **An overview of protected satellite communications in intelligent age**

Keywords: SatCom; protected communication; intelligent; AEHF

Cite as: C. H. Wang, Z. S. Zhang, J. Y. Wu, et al. Sci China Inf Sci, vol. 64, no. 6, pp. 161301, 2021. doi:

10.1007/s11432-019-2928-9

### **Joint channel estimation and beam selection NOMA system for satellite-based Internet of Things**

Keywords: satellite-based Internet of Things; non-orthogonal multiple access; channel estimation; system throughput; fairness

Cite as: Chen Z Q, Jiao J, Wu S H, et al. Sci China Inf Sci, 2022, 65(10): 202301, doi: 10.1007/s11432-021-3320-8

### **CS-LTP-Spinal: a cross-layer optimized rate-adaptive image transmission system for deep-space exploration**

Keywords: deep-space image transmission; cs-ltp-spinal; rate-adaptive; cross-layer optimization; semi- physical simulation

Cite as: Wu S H, Li D Q, Jiao J, et al. Sci China Inf Sci, Vol. 65, no.1, pp.112303, 2022. doi: 10.1007/s11432-020-3164-5

### **Joint optimization of user association and resource allocation in cache-enabled terrestrial-satellite integrating network**

Keywords: satellite backhaul terrestrial-satellite integrating network; content caching; user association; resource allocation; satellite backhaul

Cite as: S. Ni, J. Y. Liu, M. Sheng, et al. Sci China Inf Sci, vol. 64, no. 8, pp.182306, 2021. doi: 10.1007/s11432-020-3083-5

### **Spectrum sensing based on angular reciprocity in cognitive satellite communication system**

Keywords: satellite communications; spectrum sensing; angle reciprocity; energy detector

Cite as: J. C. Fan, Y. Ban, J. Luo, et al. Sci China Inf Sci, vol. 64, no. 8, pp.182308, 2021. doi: 10.1007/s11432-019-2864-5