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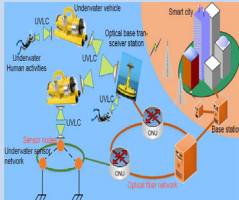
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本期封面图片由西安理工大学张颖(190666)提供



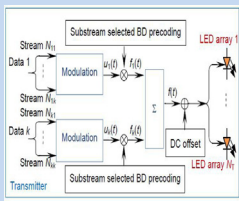
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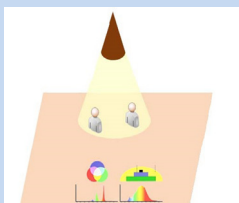
- Progress and prospect of high-speed visible light communication** 190687
Chi Nan, Chen Hui

Based on visible light communication technology, the background of visible light communication was reviewed, the basic system architecture was illustrated, and the research progress of visible light communication around five frontier directions were explored.



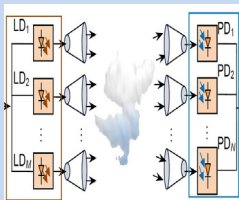
- Analysis of spatial correlation of precoding indoor MIMO visible light communication system** 190666
Zhang Ying, Gao Yue, Ke Xizheng

In order to solve the problem of multi-user interference and the subchannel strength generated by the BD algorithm, the bit error rate of the indoor MU-MIMO visible light communication system was optimized by using the substream selected BD algorithm.



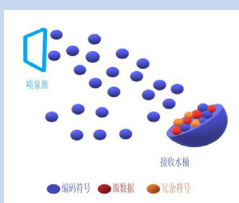
- LED nonlinearity compensation and bandwidth expansion techniques in visible light communication** 190671
Wang Yuhao, Cao Fan, Deng Zhenyu, Liu Xiaodong, Luo Yusang, Ma Shuai, Yan Qirong

Taking white LED as the starting point, it is expounded that white LED can effectively balance the characteristics of illumination and communication. And various techniques of nonlinear distortion compensation and extended modulation bandwidth were summarized and classified.



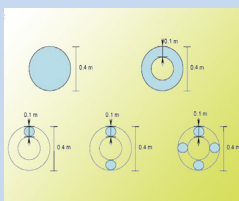
- Research status and development of optical spatial modulation technology** 190712
Mao Yicong, Wang Huiqin, Zhang Yue, Cao Minghua

Firstly, several OSM technologies were introduced and their research status was summarized. Next, the OSM, OSSK, EOSM and DOSM schemes were compared and analyzed in terms of transmission rate, spectral efficiency, BER and complexity.



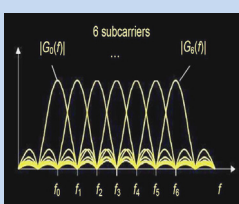
- Development and prospect of fountain codes in optical wireless communication** 190623
Wu Yi, Liu Hongzhan, Hao Yuan, Liu Liyuan

The advantages of fountain codes applied to optical wireless communication and the domestic and foreign researches of fountain codes were summarized. One kind of fountain codes, namely Luby transform (LT) codes was put forward, and the optimization schemes in recent years were introduced. The key difficulties in the fountain codes design were pointed out.



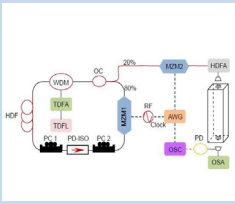
- Analysis of space diversity method in modulating retro-reflector optical communication** 190701
Wang Ke, Xu Zhiyong, Li Xuesong, Wang Jingyuan, Li Jianhua, Zhao Jiyong, Wei Yimei, Wu Chuanxin

In order to reduce the impact of the atmospheric turbulence, an improved scheme based on the diversity of the retro-reflector is proposed.



- Research on the key technology of turbulence suppression for atmospheric optical laser communication based on OFDM** 190619
Guo Qian, Song Peng, Zhang Zhouqiang, Zhou Awei, Qu Pingge

Aiming at the problem of laser atmospheric channel especially the problems of frequency selective fading and multipath effect in complex turbulent environment, the suppression method was proposed based on OFDM turbulence effect, the FSO-OFDM system was built, and the baseband model of this system and the signal of multi-carrier modulation and demodulation method were studied.

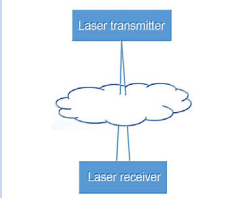


Propagation characteristics of 2.07 μm fiber laser in weak turbulence condition

190588

Lin Peng, Wang Tianshu, Ma Wanzhuo, Chen Junda, Jiang Huilin

An actively mode-locked holmium-doped fiber laser with a central wavelength of 2.07 μm was demonstrated, and the propagation characteristics under weak turbulent condition were analyzed. A segment of 1.5 m holmium-doped fiber was used as gain medium.

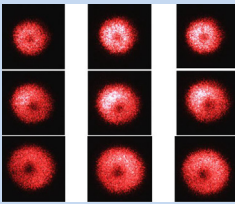


Analysis of the effect of cloud thickness on the performance of blue-green laser communication

190389

Li Songlang, Mao Zhongyang, Liu Chuanhui, Liu Min

When the airborne laser transmitter is located above or in the center of the cloud, the laser communication performance will be reduced. In order to solve this problem, the effects of different types of clouds on laser energy attenuation, SNR, maximum symbol transmission rate and bit error rate were simulated and analyzed.

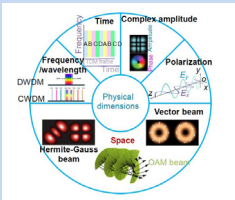


Field distribution characteristics of vortex beams passing through the non-Gaussian random rough surface

190477

Lv Hong, Ren Chengcheng, Liu Xudong, Dang Lei

Based on the theory of angular spectrum representation, the non-Gaussian rough surface was simulated by Johnson transfer system, and the field distribution characteristics of Laguerre-Gaussian vortex beams passing through the random non-Gaussian rough surface were studied.

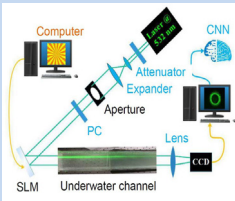


Research advances of orbital angular momentum based optical communication technology

190593

Guo Zhongyi, Gong Chaofan, Liu Hongjun, Li Jingjing, Wang Zikun, Yang Yang, Gong Yubin

Based on the basic concepts and theories of OAM beam types and their generation methods, a brief overview of typical research cases related to the application mechanisms of these two communication systems was given. Three key technologies were discussed.

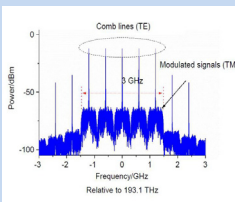


Research progress of orbital angular momentum modes detecting technology based on machine learning

190584

Yin Xiaoli, Cui Xiaozhou, Chang Huan, Zhang Zhaoyuan, Su Yuanzhi, Zheng Tong

The OAM modes detecting schemes based on ML technology were reviewed, including error BP neural networks, SOM, SVM, CNN, mode recognition techniques based on beam transformations and all-optics D2NN. The performance, advantages and obstacles of each kind of the neural networks in atmosphere and underwater channels were analyzed.

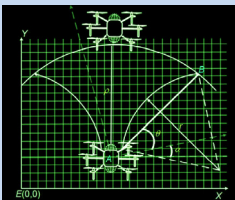


An ultra-wideband microwave photonic channelized receiver with zero-IF architecture

190650

Chen Bo, Wang Mingjun, Gao Yongsheng

A zero-IF receiver based on microwave photonic was proposed. The center frequency of the optical frequency comb can be adjusted to correspond to the center frequency of the wideband RF signal group.

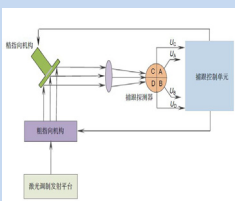


An algorithm for the bee colony drone to use wireless ultraviolet for cooperative obstacle avoidance

190505

Zhao Taifei, Gao Peng, Shi Haiquan, Li Xingshan

An algorithm for collaborative avoidance using wireless ultraviolet light between drones in a bee colony drone formation was proposed. Combined with this algorithm and using the characteristics of wireless ultraviolet light coverage, the avoidance strategy of ultraviolet virtual fence was designed.



Research on acquisition and tracking technology for the four-quadrant detector

190559

Lu Qian, Ren Bin, Bian Jingying

Aiming at the space laser communication system requirement of miniaturization, a scheme of using the four-quadrant detector to complete the acquisition and tracking was proposed. The feasibility of the scheme was verified, and a foundation for the miniaturization design of the laser terminal was laid.