



# 通信科学



# 电 信 科 学

第 37 卷第 7 期 2021 年 7 月

## 目 次

### 综 述

面向 6G 的卫星通信网络架构展望 ..... 吴晓文, 焦侦丰, 凌 翔, 刘 冰, 朱立东, 韩 磊 [2021147](1)

### 专题：海洋物联网

海洋数据传输网络体系结构及挑战 ..... 姜胜明, 葛丽阁, 徐艳丽 [2021142](16)

海洋物联网关键技术研究与应用 ..... 瞿逢重, 来杭亮, 刘建章, 涂星滨, 姜 园 [2021149](25)

面向海工装备智能化的海洋异构物联网架构 ..... 付振华, 李 杰, 季 飞, 余 华 [2021150](34)

海洋探测无人艇：平台设计及应用 ..... 王伟平, 何 西, 董 超, 郑 兵, 李 雪 [2021146](40)

水面无人艇远距离通信系统设计与实现 ..... 李 雪, 胡海驹, 王伟平, 陈焱琨, 郑 兵, 董 超 [2021141](48)

### 研究与开发

基于 KVM 的虚拟机 Post-Copy 动态迁移算法稳定性优化 ..... 陈双喜, 赵若琰, 刘 会, 吴春明, 阮 伟 [2021145](57)

一种新型低复杂度双层分组天线选择算法 ..... 张沛昌, 安万年, 钟世达, 黄 磊, 庄春生, 张 伟 [2021111](67)

基于持续同调性的人脑认知过程格式塔模式识别拓扑分析 .....  
..... 刘再生, 倪 霖, 李荣鹏, 张宏纲, 刘 畅, 张解放, 谢松云 [2021124](77)

5G 在铁路智能车站中的应用 ..... 陈瑞凤, 李 君, 徐春婕, 程清波, 吕晓军 [2021117](86)

基于吸引模式的局部二阶梯度轮廓人脸识别算法 ..... 叶学义, 钱丁炜, 应 娜, 王 涛 [2021140](96)

频谱资源经济价值评估和定价机制研究及展望 ..... 董 洁, 李恒志, 陈 岩, 王文娟[2021138](107)

基于电力大数据的中国工业增加值现时预测 ..... 彭 放, 彭高群, 祁亚茹, 刘甜甜, 周晓磊[2021143](115)

### 工程与应用

面向 5G STN 承载网络 FlexE 切片技术 ..... 尹远阳, 林贵东, 杨广铭, 卢 泉, 蓝双凤[2021068](126)

5G 网络上行覆盖增强研究 ..... 胡煜华, 王鑫炎, 李 贝[2021148](134)

基于 5G 的水泥行业数字矿山应用场景及网络建设难点 ..... 赵慧杰, 张学智, 谢 东[2021098](142)

5G 赋能海上无人值守平台 ..... 夏如君[2021144](148)

# Telecommunications Science

Vol.37 No.7 July 2021

## Contents

### Comprehensive Review

- Outlook on satellite communications network architecture for 6G .....  
.....WU Xiaowen, JIAO Zhenfeng, LING Xiang, LIU Bing, ZHU Lidong, HAN Lei [2021147](1 )

### Topic: Marine Internet of Things

- Architecture and challenges of system models for marine data transmission networks .....  
.....JIANG Shengming, GE Lige, XU Yanli [2021142](16)
- Research and application on key techniques of marine IoT .....  
.....QU Fengzhong, LAI Hangliang, LIU Jianzhang, TU Xingbin, JIANG Yuan [2021149](25)
- Architecture of a heterogeneous marine Internet of things for intelligent offshore engineering .....  
.....FU Zhenhua, LI Jie, JI Fei, YU Hua [2021150](34)
- Marine survey unmanned surface vessel: platform design and application .....  
.....WANG Weiping, HE Xi, DONG Chao, ZHENG Bing, LI Xue [2021146](40)
- Design and implementation of unmanned surface vessel long-distance communication system .....  
.....LI Xue, HU Haiju, WANG Weiping, CHEN Yankun, ZHENG Bing DONG Chao [2021141](48)

### Research and Development

- Stability optimization of dynamic migration algorithm for Post- Copy of virtual machine based on KVM .....  
.....CHEN Shuangxi, ZHAO Ruoyan, LIU Hui, WU Chunming, RUAN Wei [2021145](57)
- A novel low-complexity two-tier group antenna selection algorithm .....  
.....ZHANG Peichang, AN Wannian, ZHONG Shida, HUANG Lei, ZHUANG Chunsheng, ZHANG Wei [2021111](67)
- Persistent homology based topological analysis on the gestalt patterns during human brain cognition process .....  
.....LIU Zaisheng, NI Fei, LI Rongpeng, ZHANG Honggang, LIU Chang, ZHANG Jiefang, XIE Songyun [2021124](77)
- Application of 5G in railway smart stations .....  
.....CHEN Ruiseng, LI Jun, XU Chunjie, CHENG Qingbo, LV Xiaojun [2021117](86)
- Face recognition algorithm based on attractive local second gradient contours .....  
.....YE Xueyi, QIAN Dingwei, YING Na, WANG Tao [2021140](96)
- Research and prospect on economic value evaluation and pricing mechanism of spectrum resources .....  
.....DONG Jie, LI Hengzhi, CHEN Yan, WANG Wenjuan[2021138](107)
- Nowcasting of China's industrial added value based on electric power big data .....  
.....PENG Fang, PENG Gaoqun, QI Yaru, LIU Tiantian, ZHOU Xiaolei[2021143](115)

### Engineering and Application

- FlexE slicing technology for STN bearer network to 5G .....  
.....YIN Yuanyang, LIN Guidong, YANG Guangming, LU Quan, LAN Shuangfeng[2021068](126)
- Research on uplink coverage enhancement of 5G network .....  
.....HU Yuhua, WANG Xinyan, LI Bei[2021148](134)
- Application scenarios and difficulties in network construction of digital mines in cement industry based on 5G .....  
.....ZHAO Huijie, ZHANG Xuezhi, XIE Dong[2021098](142)
- 5G technology enabling unmanned offshore platform .....  
.....XIA Rujun[2021144](148)