

目 次

集成电路未来发展及关键问题观点专题

集成电路未来发展与关键问题——第 347 期“双清论坛(青年)”学术综述.....	1
陈云霄, 蔡一茂, 汪玉, 唐华, 何杰, 刘克, 郝跃	
存算一体芯片发展现状、趋势与挑战.....	16
康旺, 寇竞, 赵巍胜	
SRAM 存算一体芯片研究: 发展与挑战.....	25
叶乐, 贾天宇, 陈沛毓, 武蒙, 黄如	
高效高安全新兴计算芯片: 现状、挑战与展望.....	34
刘伟强, 陈珂, 吴比, 邓尔雅, 王佑, 龚宇, 崔益军, 王成华	
高性能模数转换器技术挑战与发展趋势.....	48
朱樟明, 刘术彬	
高效率高集成度电源管理芯片的发展与关键挑战.....	58
路延, 屈万园	
硅基毫米波集成电路设计发展现状与挑战.....	68
张净植, 余益明, 吴韵秋, 赵晨曦, 张青风, 康凯	
面向高性能计算的低温芯片技术: 发展和挑战.....	88
程然, 李博, 王宗巍, 张结印, 单伟伟, 张建军, 蔡一茂, 韩根全	
半导体量子计算芯片.....	102
张建军, 李海欧, 郭国平	
高性能芯片物理实现的关键因素.....	110
樊凌雁, 黄灿坤, 朱志伟, 刘海奎, 马香媛	
EDA 左移融合设计范式的发展现状、趋势与挑战.....	121
梁云, 卓成, 李永福	
集成电路装备光刻机发展前沿与未来挑战.....	130
胡楚雄, 周冉, 付宏, 张鸣, 朱煜	
论文	
面向标签噪声的联合训练框架.....	144
魏琦, 孙皓亮, 马玉玲, 尹义龙	
缓解随机一致性的基尼指数与决策树方法.....	159
王婕婷, 李飞江, 李珏, 钱宇华, 梁吉业	
单样本学习下时序约束稀疏表示的物体识别方法.....	191
童小宝, 熊鹏文, 宋爱国, 刘小平	
基于前景理论的行为安全博弈.....	210
路石, 杨浩, 姜斌	

Contents

Special Topic: Future Development and Key Issues of Integrated Circuits

Integrated circuit technology: future development and key issues—review of the 347th “Shuangqing Forum (Youth)”	1
Yunji CHEN, Yimao CAI, Yu WANG, Hua TANG, Jie HE, Ke LIU & Yue HAO	
In-memory computing technology: development status, trends and challenges	16
Wang KANG, Jing KOU & Weisheng ZHAO	
SRAM-based compute-in-memory: status and challenges	25
Le YE, Tianyu JIA, Peiyu CHEN, Meng WU & Ru HUANG	
High-efficiency and high-security emerging computing chips: development, challenges, and prospects	34
Weiqiang LIU, Ke CHEN, Bi WU, Erya DENG, You WANG, Yu GONG, Yijun CUI & Chenghua WANG	
Challenge and trend of high-performance analog-to-digital converters	48
Zhangming ZHU & Shubin LIU	
Development and challenges of high-efficiency highly-integrated power management integrated circuits	58
Yan LU & Wanyuan QU	
Developments and challenges of mm-Wave integrated circuits on silicon	68
Jingzhi ZHANG, Yiming YU, Yunqiu WU, Chenxi ZHAO, Qingfeng ZHANG & Kai KANG	
Low-temperature CMOS technology for high-performance computing: development and challenges	88
Ran CHENG, Bo LI, Zongwei WANG, Jieyin ZHANG, Weiwei SHAN, Jianjun ZHANG, Yimao CAI & Genquan HAN	
Semiconductor quantum computing	102
Jian-Jun ZHANG, Hai-Ou LI & Guo-Ping GUO	
Key factors in the physical design of high-performance chips	110
Lingyan FAN, Cankun HUANG, Zhiwei ZHU, Hailuan LIU & Xiangyuan MA	
The shift-left design paradigm of EDA: progress and challenges	121
Yun LIANG, Cheng ZHUO & Yongfu LI	
Development frontier and future challenges of lithography machines for integrated circuit manufacturing	130
Chuxiong HU, Ran ZHOU, Hong FU, Ming ZHANG & Yu ZHU	
RESEARCH PAPER	
A joint training framework for learning with noisy labels	144
Qi WEI, Haoliang SUN, Yuling MA & Yilong YIN	
Gini index and decision tree method with mitigating random consistency	159
Jieting WANG, Feijiang LI, Jue LI, Yuhua QIAN & Jiye LIANG	
Object recognition based on one-shot learning with temporally constrained sparse representation	191
Xiaobao TONG, Pengwen XIONG, Aiguo SONG & Peter X. LIU	
Prospect theory-based behavioral security game	210
Shi LU, Hao YANG & Bin JIANG	