

2021 IEEE 15th International Conference on Electronic Measurement & Instruments (ICEMI 2021)

**Nanjing, China
29 – 31 October 2021**

**Volume 1
Pages 1-510**



**IEEE Catalog Number: CFP2133C-POD
ISBN: 978-1-6654-4492-7**

**Copyright © 2021 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP2133C-POD
ISBN (Print-On-Demand):	978-1-6654-4492-7
ISBN (Online):	978-1-6654-4491-0

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

Table of Contents

Vol.1

Electronic Measurement Technology and Instruments

ICEMI20210011	Research on the Theoretical Steady-State Error of Direct Current Comparator <i>Liren Zhou, Li Zhu, Ji Geng, Qin Yi, Pan Yang</i>	1
ICEMI20210012	Dynamic Capacity Enhancement Technology and Application in Electric Internet of Things <i>Wanpei Chen, Qinrong Yang, Shen Gao, Heng Han</i>	6
ICEMI20210014	Laser Communication Test System Based on Ten Gigabit Ethernet <i>Hongliang Yan, Junjie Liu, Debao Wei, Wang Liu, Liyan Qiao</i>	11
ICEMI20210018	Precise Calibration of Common Mode Impedance Modulus of Coupling/Decoupling Network <i>Zhiqiang Zhan, Yulong Teng</i>	18
ICEMI20210020	Design of Automatic Test System for Multi-channel Digital Receiver Module <i>Libin Chen, Laiping Wu, Yushuang Li</i>	22
ICEMI20210021	Research and Implementation of Online Monitoring Technology for IGBT Key Devices of High-power Power Supply <i>Wenjian Zhou, Sheng Yang, Yang Deng, Yifan Wang, Xiaoyue Yang, Xuming Liang</i>	27
ICEMI20210023	Research on Satellite Earth Sensor Simulator Calibration Technology <i>Kai Wang, Heying Wang, Zhan Liu, Zhiyuan Hu, Baolin Wang, Yujing Wu</i>	33
ICEMI20210025	Design and Realization of Experimental Instrument for ZPW-2000 Frequency-Shift Signal Generator <i>Yaojun Kang, Jianguo Li, Zhenglin Zhang</i>	39
ICEMI20210031	Design of High-speed Serial data Generation Module with Controllable Edge Jitter Based on Phase Interpolation <i>Wanyu Yang, Chao Liang, Jianmin Zhou</i>	44
ICEMI20210034	The Design of a Protocol Buffer Library for Vala <i>Liang Liang, Zhilong He</i>	51
ICEMI20210035	Joint System Calibration and Signal Recovery Based on Bilinear Inverse Equation for Modulated Wideband Converter <i>Jingchao Zhang, Yuting Wang, Yinuo Su, Liyan Qiao</i>	56
ICEMI20210038	ADC Parameter Test Based on Improved Maximum Likelihood Estimation <i>Wanyu Yan, Houjun Wang, Yixi Liao</i>	62

ICEMI20210043	Calibration Approaches to Coupling Factor and Decoupling Attenuation for Coupling /Decoupling Networks (CDNs)	71
	<i>Zhiqiang Zhan, YiBin Wan, Yulong Teng</i>	
ICEMI20210044	Weak Signal Detection Based on a Differential Dual-Coupling Method under Lévy Noise	76
	<i>Li Wang, Hanwen Zhang, Xie Hua, Min Huang</i>	
ICEMI20210047	Design of High Speed Serial Data Generation Module with Controllable Output Edge Jitter Based on Delay Line	82
	<i>Wanyu Yang, Chao Liang, Jianmin Zhou</i>	
ICEMI20210051	Low-power Design and Implementation of An Ice-based Towed Ocean Upper Layer Profiling Buoy	88
	<i>Yabin Men, Junyi Wang, Xinpeng Wang</i>	
ICEMI20210053	Research on Task-Oriented Spacecraft Power Capability Evaluation Technology	94
	<i>Tongzhi Yang, Jiancheng Dang, Tingyu Liu, Ruzhi Zhou, Jie Zhou, Jie Wang</i>	
ICEMI20210054	Design of Quadrature Lock-in Amplifier Based on LMS Time Delay Adaptive	100
	<i>Li Wang, Zhikun Wei, Hua Xie, Gen Qiu</i>	
ICEMI20210057	Measurement and application of high-value resistance	105
	<i>Yazhen Tong, Shangming Sang, Ming Yan, Xian Zhang, Xingxi Wen</i>	
ICEMI20210062	Research on Temperature Compensation of Piezo-resistive Pressure Sensor Based on Newton interpolation and Spline interpolation	109
	<i>Jianling Wang, Guoqing Hu, Ji Li, Yonghong Zhou, Chong Zou, Jahangir Alam S.M.</i>	
ICEMI20210067	Error Revision of Atmospheric Electric Field Mills in Real Environments based on Simulations with the Finite Element Method	114
	<i>Lin Song, Feng Ding, Fanhui Meng</i>	
ICEMI20210069	Design of Ultra-wideband and Compact Signal Acquisition Test System	121
	<i>Pengcheng Gu, Xiao Tian, Mingbing Li, Gang Chen, Xiaoyan Huang, Xiuqiong Huang</i>	
ICEMI20210070	Simulation and Road Test of a Traveling Working Radar	126
	<i>Xiaohong Wang, Huiyue Yang, Feng Hu</i>	
ICEMI20210072	Design of Ultra-wideband Power Amplifier Module	132
	<i>Yubin Yang, Qinglong Zhang, Chunqing Xu, Engang Chen</i>	
ICEMI20210076	On-line Evaluation Method of CVT Internal Insulation State Based on Support Vector Machine	137
	<i>Yunwu Xu, Hongbin Li, Qing Chen, Chuanji Zhang, Jing Zhang, Yuxuan Zhang</i>	

ICEMI20210077	Research on Spacecraft Maintenance System Technology for Autonomous Management	145
	<i>Tongzhi Yang, Jiancheng Dang, Xianjun Cai, Tingyu Liu, Sen Wang, Chong Wang</i>	
ICEMI20210079	Research on High Accurate Measurement on Dual Frequency Signals	151
	<i>Wen Sun, Haibin Jin, Beibei Hu, Aqin Chen, Huan Zhang, Jiajun Peng</i>	
ICEMI20210080	Multi-Band Field-Circuit Coupling Analysis Method for Very Fast Transient Overvoltage	157
	<i>Jing Zhang, Qing Chen, Hongbin Li, Yang Jiao, Lei Zhou, Yunwu Xu</i>	
ICEMI20210082	Design of Multi-channel Payload Data Simulator Based on TLK2711	164
	<i>Meng Wang, Guangquan Zhao, Jifeng Xiao, Xinjia Xia, Ming Zhong, Xiyuan Peng</i>	
ICEMI20210083	Design of Broadband Transmitter Based on Multichannel Parallel Modulations	170
	<i>Shengyi Zhang, Yu Tian, Peng Ye, Hao Zeng, Lianping Guo, Xiaoyu Yu</i>	
ICEMI20210084	Parameter Design in Channelized Broadband Signal Spectrum Measurement Structure	176
	<i>Lianping Guo, Jie Meng, Shengyi Zhang, Yu Tian, Meng Wang, Peng Ye</i>	
ICEMI20210085	Research on Automatic Calibration and Test of VXI Bus Analog Signal Synthesis Test Module	182
	<i>Na Liang, Hao Zeng, Yu Tian, Lianping Guo, Jun Jiang, Peng Ye</i>	
ICEMI20210086	Research on Performance Test Method of Integrated Electro-Hydraulic Braking System	189
	<i>Binfeng Chen, Bin Guo, Xiaofeng Hu</i>	
ICEMI20210092	Research on Grounded Coplanar Waveguide for Calibration of Digital Real-time Oscilloscope Probe	194
	<i>Jiangmiao Zhu, Xiangrui Zheng, Kejia Zhao, Zhaotong Wan</i>	
ICEMI20210093	Adaptive Zero-IF I/Q Imbalance and DC Offset Calibration Algorithm	200
	<i>Jingrui Xiang, Shulin Tian, Peng Ye, Jie Meng</i>	
ICEMI20210094	Design of Eight-Channel Synchronous High-Speed Data Acquisition System Based on Timestamp	206
	<i>Wuhuang Huang, Chunyou Yuan, Zhixiang Pan, Duyu Qiu, Qinchuan Zhang, Peng Ye</i>	
ICEMI20210095	Design of ATS for Frequency Synthesizer and Research on Test Methods	214
	<i>Libin Chen, Laiping Wu, Qiangyi Du, Liu Yang, Jianxin Sun, Chao Xu</i>	
ICEMI20210098	Reconstruction of Furnace Temperature Field by Ultrasonic Transducer	219
	<i>Fenjin Chao, Shaohong Wang, Fuqiang Zhou, Zeyi Zhao, Lei Chen, Xiaoli Xu</i>	
ICEMI20210100	Calibration of Analog to Information Converter based Sampling System	224
	<i>Xiaoyan Zhuang, Xibin Yuan</i>	

ICEMI20210101	Soft Errors Reliability Validation and Verification Induced by Signal Event Effect on a High Security Commercial Microprocessor	228
	<i>Xiang Gao, Xiaoling Lai, Shenghua Zhai, Xuan Wang, Shu Zhu, Qi Zhu, Guochang Zhou, Jian Wang</i>	
ICEMI20210102	Design and Realization of FPGA-based DRFM with High Instantaneous Bandwidth	233
	<i>Jun Jiang, Fu Liu, Cong Hu</i>	
ICEMI20210106	Performance Calibration Study of the Payload Onboard the SVOM Satellite	240
	<i>Tao Yu, Siming Guo, Jiang He, Xing Wen, Zheng Jiang, Xiaoyu Qie, Jinjie Wu</i>	
ICEMI20210107	Research on Method of Instantaneous Frequency Measurement Based on CORDIC Algorithm	245
	<i>Xiaoyu Yu, Shulin Tian, Hao Zeng, Yu Tian, Peng Ye, Lianping Guo, Shengyi Zhang, Meng Wang</i>	
ICEMI20210109	GRU-CNN Neural Network for Electrical Impedance Tomography	250
	<i>Wenru Fan, Yu Cheng</i>	
ICEMI20210110	Study on the performance of SY-01 Satellite gamma-ray detector	254
	<i>Xiaoyu Qie, Siming Guo, Jiang He, Zheng Jiang, Tao Yu, Xing Wen, Shiwei Ren, Zhenghua An, Jinjie Wu</i>	
ICEMI20210111	Research on the Influence of Solder Mask on Signal Integrity in High Speed PCB	259
	<i>Yangyang Chen, Fenghua Ye, Qianqian Hu, Lei Kang, Sigai Zhang, Jiarun Chen</i>	
ICEMI20210113	Study on A-GNSS Terminal Over-The-Air Test System	264
	<i>Yunling Wang, Qing Cai, Jie Xu</i>	
ICEMI20210115	High-Accuracy and Fast Charging Method Based on Multi-Channel Two-Stage Charging Strategy for Surface Nuclear Magnetic Resonance	269
	<i>Suhang Li, Yang Zhang, Tingting Lin</i>	
ICEMI20210116	Low Spurious Waveform Synthesis Based on Digital Resampling	276
	<i>Wenhao Zhao, Shulin Tian, Ke Liu, Lei Huang, Guangkun Guo, Qiong Wu</i>	
ICEMI20210117	Design of AtomicTime Scale System Steered by Cesium Atomic Fountain Clock	281
	<i>Jiangmiao Zhu, Weibo Zhao, Yuan Gao, Yan Jiang</i>	
ICEMI20210120	Design of Double-Masking Current-Mode CMOS Circuit Against Power Analysis Attacks	285
	<i>Maoqun Yao, Conghui Li, Ziwei Xue</i>	
ICEMI20210122	Analysis and Testing of Structural Resonance Frequency for Measurement Radar	289
	<i>Wenjie He, Rui Bao, Haitao Shi</i>	

ICEMI20210123	Study on Energy calibration of LaBr₃(Ce) Scintillation Detector	294
	<i>Zheng Jiang, Siming Guo, Tao Yu, Xiaoyu Qie, Jinjie Wu, Wanchang Lai</i>	
ICEMI20210124	Design and Implementation of Intelligent Spaceborne Test Unit	299
	<i>Yao Li, Yutong Ma, Xiyuan Peng</i>	
ICEMI20210127	A Clock Synchronization Method Based on An Optimized DPLL Equivalent to A Steady State Kalman Filter	305
	<i>Suyang Liu, Jun Yang, Xiye Guo, Kai Liu</i>	
ICEMI20210130	Power Input Characteristic Measurement System for Airborne Electrical Equipment Based on Labview	310
	<i>Jiaying Liu, Shuai Yang, Renliang Ren</i>	
ICEMI20210137	Development of Calibration Source for Dynamic Contact Resistance Tester of Conductive Ring Based on Time-Varying Resistance	315
	<i>Ming Yan, Congru Yin, Yue He, Tiantian Li</i>	
ICEMI20210138	A Cascaded Digital Trigger Method in Sub-Band Decomposition System	321
	<i>Xuefeng Dai, Peng Ye, Yu Zhao, Kuojun Yang, Maolin Lei</i>	
ICEMI20210139	Hybrid Method for Extend the Measured Average Time Range of Allan Deviation	326
	<i>Lin Xu, Peng Ye, Shuang Liao, Cheng Chen, Jie Zhang, Feng Tan</i>	
ICEMI20210143	Analysis and Modeling of Hybrid Analog-digital PLL	332
	<i>Cheng Chen, Peng Ye, Shuang Liao, Lin Xu, Jie Zhang, Feng Tan</i>	
ICEMI20210146	Design and Implementation of In-situ Automatic Test for Radio Altimeter Based on an Altitude Simulator	336
	<i>Hongchun Wang, Tianzhu Wen, Yuhai Wang</i>	
ICEMI20210149	Forward and Lateral Dual-Angle Optical Particle Counter Data Fusion to Detect Particle Mass Concentration	341
	<i>Rongrui Zhang, Heng Zhao, Zixuan Liu, Kun Li, Luoren Shi, Jiaqi Li</i>	
ICEMI20210150	Design of the Main Control Unit of Marine Hydrologic Profile Measuring Buoy Based on Wireless Communication	346
	<i>Xinpeng Wang, Tao Dong, Yabin Men, Dongliang Zhang, Xingmin Li</i>	
ICEMI20210152	Wireless Time-Sensitive Networking Based on Distributed Clock Synchronization	352
	<i>Jinzhaoh She, Jianyun Chen, Zhi Qu</i>	
ICEMI20210153	Research on the design of Reconfigurable Universal Automatic Test System	359
	<i>Tianzhu Wen, Yiping Wang, Zhongde Wu</i>	
ICEMI20210155	Overview of Subsurface Damage Detection Technologies for Ultra-smooth Quartz Components	364
	<i>Dongfang Zhao, Junning Cui, Xingyuan Bian</i>	

ICEMI20210156	Harmonic Suppression of Ultralow-frequency Standard Vibration based on Iterative Learning Control	370
	<i>Wei Li, Junning Cui, Limin Zou</i>	
ICEMI20210158	Design and Implementation of New Transimpedance Amplifier for Measuring Optical Signal	374
	<i>Kun Li, Heng Zhao, Rongrui Zhang, Zixuan Liu</i>	
ICEMI20210159	Design and Optimization of Light Trap Based on Angular Scattering Particle Counter	379
	<i>Zixuan Liu, Heng Zhao, Rongrui Zhang, Kun Li</i>	
ICEMI20210160	Connection Resource Testing Technology on FPGA Based on SOC core	383
	<i>Weikun Xie, Ziyuan Nan, Shi Gao</i>	
ICEMI20210163	Data-Stream Modeling of Synthesis Waveform Sequence Based on SDRAM	391
	<i>Xiaoting Tang, Yindong Xiao, Cong Hu</i>	
ICEMI20210164	Cloud Monitoring of Large Air-Floated Micro-Vibration Isolation Platform	396
	<i>Mingrui Jin, Junning Cui, Yamin Zhao</i>	
ICEMI20210170	DAC-based 6.4GSPS High Speed and Dual Channel Signal Generation for AXIe Instrument	401
	<i>Zhicheng Wen, Shuo Yang, Jiawei Cao, Hao Li, Zhigang Wang, Guangkun Luo</i>	
ICEMI20210177	Novel Air Shower Approach to Maintain Thermal Stability for 12m Dynamic Calibration System of Laser Interferometer	406
	<i>Junning Cui, Wenwen Cui, Yesheng Lu, Zhou Tong</i>	
ICEMI20210184	A Soft Measurement Method for Initial Position of SPMSM with Multi-Pulse Excitation	410
	<i>Yihang Zhao, Xunshen Zhou, Wenjun Huang, Zhenjie Liu</i>	
ICEMI20210186	Electronic Design for Multichannel Coincidence Digital Positron Annihilation Lifetime Spectrometer	416
	<i>Changchang Zhao, Hao Liang, Jiajin Ge</i>	
ICEMI20210187	Micro-displacement Measurement of High-Speed Railway Bridge Based on Vector Network Analyzer	420
	<i>Zhuoyan Gao, Yan Jia, Shuyi Liu, Xiangkun Zhang</i>	
ICEMI20210194	Fault Diagnosis Optimization Method of Analog Circuit Based on Matrix Model	426
	<i>Enmin Tan, Shunmei Huang, Jimin Ruan</i>	
ICEMI20210196	Real-time Simulation Platform of DC Microgrid Fault Detection Based on FPGA	432
	<i>Zhenhua Jin, Yuwei Hua, Shengjun Kan</i>	

ICEMI20210199	Geomagnetic Matching Combined Navigation Based on Improving Operation Efficiency of DTW Algorithm	438
	<i>Gang Huo, Junna Shang, Dongli Zhang, Yiteng Wang</i>	
ICEMI20210200	Relationship between Planet Gear Parameters and the Vibration Characteristics of Planetary Gearboxes	445
	<i>Yingchao Luo, Lingli Cui, Genqiang Jing, Lu Peng, Qihao Yin, Xiaofan Feng</i>	
ICEMI20210207	Research on Torque Calibration and Measurement Technology in Water	451
	<i>Tao Li, Dingding Zhao, Xianglong Ma, Guoqing Chen, Shu Jiang</i>	
ICEMI20210215	Large Scale Electric Network Analysis Based on Circuit Topology and MCL Algorithm	456
	<i>Yuxuan Zhou</i>	
ICEMI20210216	Evaluation of Uncertainty of Measurement Result of Ultrasound Anemometer	461
	<i>Songkui Li</i>	
ICEMI20210217	Measurement of Mixer Based on Vector Network Analyzer	466
	<i>Shuyi Liu, Zhuoyan Gao, Yan Jia, Yongqing Liu, Xiangkun Zhang</i>	
ICEMI20210218	Broadband Real-Time Spectrum Monitoring Algorithm for Radio Wave	472
	<i>Xianhai Wang, Teng Wang, Jun Han, Chuan Yin, Jinhong Luo, Biwei Qian</i>	
ICEMI20210224	Research on Hardware-in-the-loop Simulation of Stepped Frequency Ultra-wideband Radar	478
	<i>Shuyi Liu, Zhuoyan Gao, Yan Jia, Yongqing Liu, Xiangkun Zhang</i>	
ICEMI20210228	Voltage Condition Monitoring Method of Accelerator Distribution Network Based on Deep Learning	483
	<i>Dezhi Wang, Jiang Zhao, Zhongzu Zhou, Peng Sun, Xinwei Jiang, Anhui Feng</i>	
ICEMI20210229	Security Transmission Scheme for Multi-antenna Cooperative Relay Networks Based on Simultaneous Wireless Information and Power Transfer	492
	<i>Guangda Zhang, Qinghua Ren, Zhikai Fan</i>	
ICEMI20210232	Broadband Millimeter Wave Dielectric Properties Measurement of Low Loss Materials	498
	<i>Qiao Zou, Rui Zhao, Jie Wu, Yahai Wang, Ziqi Jiang, Jinbang Wang</i>	
ICEMI20210234	Theoretical Study of Single Component Dye Concentration Measurement Based on Quantum Tunneling Mechanism	502
	<i>Jiangting Song, Fujiang Jin, Lichun Zhou</i>	

Author Index

Table of Contents

Vol.2

Information Processing and Intelligent Control

ICEMI20210004	Assessment Method of Fusion Image Quality Based on Region Entropy	1
	<i>YuminTian, Yong Zhang, Li Li</i>	
ICEMI20210008	Domain Adaption Short Term Load Forecasting Algorithm Based on Extended Time Series for Traffic Flow Prediction	5
	<i>Qinqin Qu, Lei Xu, Yuxi Zhou</i>	
ICEMI20210010	Methodology for Fast Edge Compression Based on SRD	11
	<i>Dexuan Kong, Zaiming Fu, Hanglin Liu, Nan Ren</i>	
ICEMI20210015	Atmospheric Environment Data Generation Method Based on Stacked LSTM-GRU	17
	<i>Fuyong Zhang, Xiangyu Gao, Shanshan Zhang, Qiwei Wang, Lianlei Lin</i>	
ICEMI20210017	Research on Digital Cavity Thermal Control Techniques for Performance Improvements of Hydrogen Masers	27
	<i>Xirui Li, Ao Feng, Yong Cai, Jianyu Qi</i>	
ICEMI20210028	A Portable Unilateral Nuclear Magnetic Resonance Magnet Designed for Breast Cancer Detection	32
	<i>Jinxiang Zhang, Chibin Pu, Junnan Wang, Siyu Liu, Rongsheng Lu, Hong Yi</i>	
ICEMI20210032	Selective Kernel Network based on Joint Attention Mechanism for Rolling Bearing Fault Diagnosis	37
	<i>Yijia Hao, Yanggang Xu, Huan Wang, Zhiliang Liu</i>	
ICEMI20210033	A Weighted Collaborated Representation Anomaly Detector for Hyperspectral Image	43
	<i>Ning Ma, Qi Liu, Wenbo Wu, Qiangmin He, Liansheng Liu, Yu Peng</i>	
ICEMI20210040	Self-organized Cooperative Electronic Jamming by UAV Swarm Based on Contribution Priority and Cost Competition	49
	<i>Pei Li, Yu Liu, Xingsong Deng, Baodong Wu, Rong Fu</i>	
ICEMI20210045	A Cloud-Based Automatic Test System for Civil Aircraft Ground Function Health Management	54
	<i>Xuhui Li, Chenyang Su, Yan Tong, Jinsong Yu</i>	
ICEMI20210049	Architecture Design of Intelligent Campus One-stop Service Platform Based on Middle Platform and Micro Service	59
	<i>Manjing Zhu</i>	

ICEMI20210060	Research on the Application of Three-Dimensional Laser Scanner Method for Whole Life Cycle Capacity Measurement and Safety Monitoring of Storage Tanks	64
	<i>Xianlei Chen, Zenan Wu, Haolei Shi, Huadong Hao, Junxue Chen, Zhenqian Shen</i>	
ICEMI20210061	Test and Evaluation for Infrared Small Target Detection System	69
	<i>Shengwei Meng, Li Ma</i>	
ICEMI20210064	A Comparative Study on Inversion Algorithms of Aerosol Extinction Coefficient Based on BP and Elman Neural Network	75
	<i>Qingqing Xie, Hu Zhao, Jiaqi Guo, Ze Qiao, Xirui Ma, Bo Zhong</i>	
ICEMI20210071	Active Virtual Mass Micro-Vibration Isolation Control Method based on Two-Parameter Acceleration Feedback	80
	<i>Jing Wang, Lei Wang, Junzhong Li, Yuanyuan Yang, Yujian Bian, Bin Zhou</i>	
ICEMI20210075	Iterative Positioning Algorithm of Reference Point Based on DBSCAN	86
	<i>Jing Chen, Chao Xia, Kunkun Miu</i>	
ICEMI20210087	Prediction of Crack Propagation Based on Dynamic Bayesian Network	92
	<i>Qi Chang, Lele Chen, Heng Zhao, Fangqin Xie</i>	
ICEMI20210097	Design and Implementation of Dynamic Reconfiguration Based on Heterogeneous Arrow Control Platform	98
	<i>Ran Tao, Gang Xiang, Yue Luo, Kun Tian, Hui Li, Zhaolei Wang</i>	
ICEMI20210126	Design and Analysis of the Magnetic Circuit and Vibration of LMLP for Mass Transfer	104
	<i>Shinan Cao, Pingjuan Niu, Qiang Liu, Jin Li, Qingli Gao, Cong Peng</i>	
ICEMI20210128	A Method for Improving Efficiency of anti-UAV Radar Based on FMCW	109
	<i>Siyuan Ma, Yuhua Zhang, Dezheng Zhu, Xin Huang</i>	
ICEMI20210132	Consensus Clock Synchronization for Distributed Satellite System Based on Distributed PI Controller	114
	<i>Zhi Qu, Jianyun Chen, Ningjing Wu</i>	
ICEMI20210135	Sliding Mode Control of Reactor Power Based on Model Prediction	120
	<i>Da Tan, Gang Zhou</i>	
ICEMI20210136	Sliding Mode Control of Steam Generator Water Level Based on Particle Swarm Optimization	125
	<i>Da Tan, Gang Zhou</i>	
ICEMI20210240	Research on Measurement Technology of Mixed Gas Concentration in Flight Test	130
	<i>Hongna Jiang, Ludan Li, Yaosheng Hu</i>	

ICEMI20210147	A Mirror-based Compact Monocular Depth Estimation System for Environment Sensing	135
	<i>Yuxuan Chen, Ben Wang, Yujun Zhong, Qiongwei Li, Yi Jin</i>	
ICEMI20210161	Time Domain Response Analysis of Ship Power Equipment Vibration Isolation System under Shock	141
	<i>Zhongyi Cheng, Junning Cui, Yamin Zhao, Mingrui Jin</i>	
ICEMI20210162	From 2D To 3D, Advances of Technology and Instrumentation for Stem Cell Culture in Vitro	146
	<i>Muhang Li, Junning Cui, Ran Tang</i>	
ICEMI20210167	Lightweight Urine Sediment Image Recognition Network Based on Deep Separable Residual Structure	152
	<i>Zhiyu Qu, Shuwang Cai, Qingbo Ji, Lingjing Xu</i>	
ICEMI20210168	Research on Modeling and Simulation of Train Network Fusion System Based on OPNET	158
	<i>Bozhen Ma, Changxian Li, Dingzhu Tang</i>	
ICEMI20210169	Design of Hardware Acceleration System for Video Image Reconstruction Based on AXI Bus	162
	<i>Fei Yan, Zhuangzhuang Zhang, Zhaodong Ding, Huaxi Zhang, Yinpeng Liu, Jia Liu</i>	
ICEMI20210171	Design and Analysis of Simplified Parallel Manipulator for High-span Working Condition	168
	<i>Zhisheng Wang, Junning Cui, Tong Zhou</i>	
ICEMI20210179	Research on Canny Edge Feature Detection Technology of Color Image Based on Vector Properties	175
	<i>Weidi Kong, Haitao Zhang, Wei Zhao, Kai Tang</i>	
ICEMI20210181	Chaos Control of Vibro-impact System with Soft Constraint Based on RNN	181
	<i>Ningzhou Li, Kailiang Long, Xiaojuan Wei</i>	
ICEMI20210188	Design of Non-Intrusive Bus Data Monitoring and Intelligent Processing Unit	187
	<i>Huaizhi Li, Shengwei Meng, Shuying Dong, Peng Cheng, Yuchen Song</i>	
ICEMI20210190	Thunderstorm Prediction Method Based on CNN-BiLSTM Using BEADS	193
	<i>Xu Yang, Hongyan Xing, Xinyuan Ji</i>	
ICEMI20210191	Radiation Scene Reconstruction Based on Image Fusion from Gamma Camera and RGB-D Camera	200
	<i>Bo Liang, Gang Wang, Xiaoying Liang, Chuanhong Zeng, Yufeng Xiao</i>	
ICEMI20210193	Study on the Influence of Thermal Effect of Multi-Pulse Lightning Current on the Aging Characteristics of ZnO Varistor	206
	<i>Chunlong Zhang, Xiucheng Yi, Chunying Li, Yubao Xu, Hongyan Xing</i>	

ICEMI20210197	Development of Realistic Numerical Brain Model Based on MRIs for Microwave Brain Stroke Detection	212
	<i>Ping Han, Ziyu Liu, Qinwei Li, Ming Yu, Rongnan Zhao</i>	
ICEMI20210198	Grid Row Parameter Identification Using Tensorflow Convolutional Neural Network	217
	<i>Yanming Huo, Linyuan Li, Yuchuan Zhang, Qiushi Huang, Lucheng Zhang, Yu Wang, Zhaolei Wang</i>	
ICEMI20210206	Multi-domain Value Block Enhancement Algorithm Fused with Genetic Algorithm	222
	<i>Gaiyun Wang, Zhichao Guo, Jintao Shen, Jianbin Liu, Qi Zhang</i>	
ICEMI20210209	Autonomous Navigation Algorithm Using All-time Star Tracker, Accelerometer and Time	230
	<i>Xuwei Zhang, Zhilong Ye, Xunjiang Zheng, Shuodong Sun, Huiping Zhang</i>	
ICEMI20210210	Design and Implementation of PLC Fuzzy Controller for Intelligent Water-lubricated Bearing Lubrication System	237
	<i>Fan Jiang, Nan Wang, Mingwu Wang, Yifan Zhao, Nan Zhang, Guibao Wang</i>	
ICEMI20210214	ResUnet++ for Sparse Samples-based Depth Prediction	242
	<i>Tao Zhao, Shuguo Pan, Xuan He</i>	
ICEMI20210221	Abnormal Working Conditions Judgment Based on Data Sharing System for Power Distribution Station Area	247
	<i>Xiangfu Guo, Hao Liu, Wandeng Mao, Xinyu Meng, Min Fan, Jialu Xia</i>	
ICEMI20210237	Convolutional Neural Network for Heartbeat Classification	253
	<i>Hengyang Fang, Changhua Lu, Feng Hong, Weiwei Jiang, Tao Wang</i>	
ICEMI20210239	Research and Application of Airborne Optical Atmospheric Data System	259
	<i>Xue Bai, Hongna Jiang, Yaosheng Hu</i>	

Sensor and Detection Technology

EM20210001	Design of Infrared Thermal Imager Calibration System	264
	<i>Yongjie Fu, Jing Luan</i>	
EM20210002	Design of Laser Energy Meter Calibration System	270
	<i>Ying Cai</i>	
ICEMI20210007	Research on Automatic Calibration Method Based on ADA4557	275
	<i>Chen Wang, Haining Zhang, Zhifeng Zhu</i>	
ICEMI20210009	Optimal Design of a Bi-planar coil with a High-uniformity Magnetic Field	280
	<i>Fengwen Zhao, Xiangyang Zhou, Kai Wang, Weiqian Wang, Xinping Dai</i>	

ICEMI20210013	Development of Temperature Monitoring System Based on Finite Element Analysis for Barycenter Adjustment of Trial Airplane	285
	<i>Debao Wei, Mingchuang Liu, Zhenji Yin, Yuanshen Hong, Hengkun Yang, Liyan Qiao</i>	
ICEMI20210016	Processing Method of Horizontal Tank Capacity Based on VAB and OLE Technology	292
	<i>Yong Wan, Lei Wang, Feng Gao, Peng Tian, Jianda Lin</i>	
ICEMI20210022	Application of Ecological Sensors to Penglai Seafloor Observatory	296
	<i>Ning Wang, Pengcheng Yang, Huimin Si, Yongqin Ren, Yan Li</i>	
ICEMI20210024	Research on comprehensive test and evaluation technology of 5G high frequency and high speed new materials	302
	<i>Qing Cai, Chaochan Chen, Jiangang Zhu</i>	
ICEMI20210027	Research on On-line Monitoring Technology of Aluminum Electrolytic Capacitor in AC Power Supply	307
	<i>Wenjian Zhou, Peng Wang, Yang Deng, Gen Qiu, Yifan Wang, Xiaoyue Yang</i>	
ICEMI20210029	Research on Low Power Consumption Ultrasonic Gas Meter	312
	<i>Xun Liu, Zhongyou Jia, Yiran Zhai</i>	
ICEMI20210037	Design and application of Temperature Sensor Intelligent Verification System Based on “Cloud + Terminal” framework	316
	<i>Hanling Tan, Qingbiao Zou, Minghui Wang</i>	
ICEMI20210042	Development of App-based Ride-hailing Calculating Mileage and Time Detection Device	320
	<i>Tingting Kang, Lei Zhang, Yan Huang</i>	
ICEMI20210046	Research on QMEMS Gyro Drift Processing Method based on Adaptive Kalman Filter	324
	<i>Wanlin Zhang</i>	
ICEMI20210048	Analysis of Vibration Response and Fatigue Durability of a Large Airborne Radar Antenna	329
	<i>Chao Peng, Pin Zhang, Shuanggen Yang</i>	
ICEMI20210059	A Second-Order Mgt Permanent Magnet Localization Algorithm Based on A Dual Magnetic Dipole	334
	<i>Fenghua Xiang, Binfeng Yang, Bo Li, Zhen Zhao, Jiaojiao Guo</i>	
ICEMI20210065	Research on Phase Orientation Mechanism of Rotating Permanent Magnet Based on Fluxgate Sensor	339
	<i>Bo Li, Binfeng Yang, Fenghua Xiang, Zhen Zhao, Jiaojiao Guo</i>	
ICEMI20210068	Design of Intelligent Automatic Weather Station based on Internet of Things	344
	<i>Feilong Huang, Zeyong Guo, Yuchang Lyu</i>	

ICEMI20210081	Research on The Detection Effects of Crack Direction in CFRP Laminates Based on Rectangular Pulsed Eddy Current Probe	349
	<i>Wenru Fan, Haotian Zhang, Guang Yang</i>	
ICEMI20210089	An Algorithm Based on Random Forest for In-vehicle Navigation Pattern Recognition	353
	<i>Jiangmiao Zhu, Xiaofei Dong, Pengfei Wang, Yan Huang</i>	
ICEMI20210096	Research on feature Optimization algorithm of Optical Fiber Sensor recognition system	358
	<i>Qingkang Kou, Haiyan Xu, Jun Zhu, Zhuo Zhang, Yingjuan Xie</i>	
ICEMI20210099	Traffic Sign Recognition Method Based on Dual-Channel CNN	364
	<i>Zeyi Zhao, Fuqiang Zhou, Shaohong Wang, Xiaoli Xu, Fenjin Chao, Zhoupeng Lin</i>	
ICEMI20210104	Uncertainty Analysis of Dimension Calibration for Line Laser Scanning Measurement System	370
	<i>Yifan Zhao, Yiming Zhou, Rongrui Gu, Zhongyu Wang, Yinbao Cheng</i>	
ICEMI20210105	Research on Dynamic Characteristics of Confluence Planetary Row under Speed impact	377
	<i>Jun Yang, Changliang Tang, Liyong Wang, Xiaobo Liu, Bokang Su</i>	
ICEMI20210119	Research on the Response Characteristics of Conductive Polymerization of Selective Electrode for Marine Pure Water	382
	<i>Jun He, Juan Chen</i>	
ICEMI20210121	Research on the Processing Method of GNSS Real-Time Common-View Clock Difference Data	388
	<i>Jiangmiao Zhu, Yan Jiang, Yuan Gao, Mengmeng Zhang</i>	
ICEMI20210131	Uncertainty Evaluation in Surface Structured Light Measurement	395
	<i>Shuang Li, Zhongyu Wang, Jingyu Guan, Jihu Wang</i>	
ICEMI20210133	Research on the Compliance Judgment of Indication Error of Calibration Result of Platinum Resistance Air Temperature Sensor	401
	<i>Chunhua Wen, Shun Yao, Mingming Wei</i>	
ICEMI20210134	Research on Calibration Technology of Displacement and Angle for Triaxial Flight Vibration Test System under the Coupling Vibration Environment	407
	<i>Bo Ni, Fangyi Tian, Jigang Chen, Jiayi Lu, Yongqi Zhao, Jiang Sha</i>	
ICEMI20210142	Development and Application of Automatic Verification Device for Standard Tungsten Ribbon Lamps	413
	<i>Hongguang Xu, Tian Fang</i>	
ICEMI20210145	Characterization of Dielectric Properties of Low Loss Materials at 300 °C at Millimeter Wave	419
	<i>Qiao Zou, Rui Zhao, Yahai Wang, Ziqi Jiang, Jinbang Wang, Changle Chen</i>	

ICEMI20210148	Study on the Optimal Installation Position of L-type Pitot Tube During Calibration	424
	<i>Xing Liu, Xia Li, Lingshan Yang, Weihui Zhou, Yang Xiang</i>	
ICEMI20210157	Research and Experiment on the System of Miniaturized Diamond NV Center Ensemble Magnetometer Based on Fiber Coupling	429
	<i>Yang Gao, Chaoqun Xu, Kui Huang, Yuting Gao, Nankai Wu, Zhong Yi</i>	
ICEMI20210176	Fault Detector for Wind Sensor Based on Embedded System	433
	<i>Xiao Chen, Kai Zhang</i>	
ICEMI20210182	UAV Antenna Automatic Tracking System Based on Arduino	438
	<i>Yiqun Zhang, Wei Lyu, Tonghui Sun, Feilong Zhong</i>	
ICEMI20210195	A Three-Dimensional Target Mapping Scheme with Pupil Corneal Reflection Visual Attention Measurement	443
	<i>Jianxing Li, Liang Shen, Chaobing Liang, Ruining Yang, Cong Cai, Kan Luo</i>	
ICEMI20210201	Measurement and Analysis of Focus Dispersion in Infrared Compound-Eye Lens Array	448
	<i>Jianjun Zhang, Jianying Li, Zhen Yang, Xinmin Guo, Jianlong Zhang, Yong Zhang</i>	
ICEMI20210202	Study on the Calibration Method and Measurement of Coincidence Degree in an Infrared Compound-Eye Imaging System	453
	<i>Zhen Yang, Jianjun Zhang, Jianying Li, Xinmin Guo, Jianlong Zhang, Yong Zhang</i>	
ICEMI20210222	Study and Application of the Measurement Method of Phase Difference in the Single Component Dye Solution Concentration	458
	<i>Jiangting Song, Fujiang Jin, Lichun Zhou</i>	
ICEMI20210225	Improved Method Based on Faster R-CNN Network Optimization for Small Target Surface Defects Detection of Aluminum Profile	465
	<i>Yanxi Yang, Qiao Sun, Dongkun Zhang, Linchang Shao, Xingkun Song, Xinyu Li</i>	
ICEMI20210227	Design of Ultrasonic Radar Detection System	471
	<i>Julan Xiao, Junfeng Zhao, Fei Wu, Chengcheng Xie, Tao Chen, Hongli Liu, Ying Chen</i>	
ICEMI20210230	A Fast Cloud Detection based on Improved 2D OTSU with Zynq SoC	476
	<i>Ximing Yu, Zihao Liu, Yu Peng</i>	
ICEMI20210235	Segmentation Method of Pedestrian Object in Ground Point Cloud Image	481
	<i>Xin Shi, Liang Yu, Pengjie Qin, Zhirui Fan, Fei Liang, Gaojie He</i>	
ICEMI20210236	Research on Pedestrian Target Recognition Algorithm in Low Light Environment	485
	<i>Qiang Ning, Hao Lu, Xin Shi, Zhengli Leng, Pengjie Qin</i>	
ICEMI20210238	Feasibility Study of Fiber Bragg Grating Sensor for Strain Measurement in Flight Test	490
	<i>Ludan Li, Hongna Jiang, Yaosheng Hu</i>	

