2023 IEEE 16th International Conference on Electronic Measurement & Instruments (ICEMI 2023)

Harbin, China
9-11 August 2023

Volume 1
Pages 1-509

IEEE Catalog Number: CFP2333C-POD
ISBN: 979-8-3503-2715-1

Copyright © 2023 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: CFP2333C-POD
ISBN (Print-On-Demand): 979-8-3503-2715-1
ISBN (Online): 979-8-3503-2714-4

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

Table of Contents

Vol.1

Electronic Measurement Technology and Instruments ***1***

EM20230003 **Research on Technology of Shock Tube Active Film Breaking** ***1***
Xu Bai,Tianyu Liu

ICEMI20230003 **Miniaturized High Precision Time Interval Measurement Technology Based on FPGA** ***7***
Lei Fu,Qing Li,Bayi Qu

ICEMI20230010 **An Analysis on Effects of Different Input Phases and Amplitudes on Power Combining** ***12***
Sicheng Sun,Yijiu Zhao,Yanze Zheng,Naixin Zhou,Yongling Ban

ICEMI20230012 **Investigation on the Direct Current Coefficient of I/V Transducer** ***16***
Liren Zhou,Li Zhu,Ji Geng

ICEMI20230025 **Asymmetrical De-Embedding Method for Millimeter-Wave On-Wafer Measurement** ***21***
Liyun Shi,Liangfeng Qiu,Liang Zhou

ICEMI20230029 **Design of Multifunctional Built-in Test System for Communication Equipment** ***25***
Guangkun Luo,Yangbin Wei,Jiawei Cao,Hao Li,Zhigang Wang,Xuyang Li

ICEMI20230036 **Design and Implementation of an Ultra-low-cost Impedance Analyzer** ***33***
Xingyu Yang,Gang He

ICEMI20230037 **Research on the Starting Time Sequence of Power Analyzer System** ***39***
Jia Zhao,Bo Xu,Yifan Wang

ICEMI20230038 **High-Speed Peak Detection Circuit for On-Chip EMI Test** ***47***
Nuo Lin,Tao Su

ICEMI20230041 **Modeling of RF Multiport Circuit Based on X-parameter** ***52***
Zhenxiao Li,Lu Sun,Wei Wang,Yibo Feng,Zhixian Yang

ICEMI20230048 **Method for Delay Recovery of Trigger Signals** ***57***
Chang Su,Hao Liang

ICEMI20230049 **Correlation Comparison Testing between Traffic Speed Deflectometer and Falling Weight Deflectometer** *62*
Yingchao Luo,Huazhen An,Xiaobing Li,Genqiang Jing

ICEMI20230051 **Measurement of Mass Attenuation Coefficients Based on Monochromatic X-ray Radiation Devices** *68*
Ziyao Shu,Siming Guo,Xing Zhou,Shikui Huang,Lipeng Fan,Kaiyue Gou

ICEMI20230052 **Order Analysis Algorithm Based on Time-Domain Stretching and Its Logic Implementation** *72*
Yangbin Wei,Hao Li,Jiawei Cao,Guangkun Luo,Xuyang Li,Zhigang Wang

ICEMI20230063 **Measurements and Calculation Methods of Jitter in Broadband Sampling Oscilloscope** *81*
Jiangmiao Zhu,Yufen Sun,Junyu Chen,Mingfan Cheng,Yifan Wang,Kejia Zhao

ICEMI20230065 **Design of Underwater Multi-parameter Magnetic Detection Data Synchronous Acquisition System Based on NI CompactRIO** *86*
Shengwei Liu,Yongpeng Wu,Yi Wang,Zhijian Zhou

ICEMI20230074 **Estimation of Time Base Distortion of High Speed Sampling Oscilloscope based on Trust-Region Reflection Least Square Method** *91*
Jiangmiao Zhu,Mingfan Cheng,Yufen Sun,Junyu Chen,Yidi Wang

ICEMI20230081 **Review of Weak Signals Detection Methods** *98*
Min Huang,Anhang Zhou,Li Wang,Yifan Wang,Gen Qiu

ICEMI20230088 **Design of Self-Calibration based High Resolution Frequency Measurement Module** *105*
Peng Zhang,Ping Wang

ICEMI20230089 **Precision Time Synchronization Consistency Algorithm for Multi-node Dynamic Time-frequency Synchronization Networks** *110*
Huiqing Zhang,Jianyun Chen,Xianbin Li,Zhi Qu

ICEMI20230094 **Design and Implementation of 5GSPS High-Speed High-Precision Data Acquisition and Signal Synthesis Module** *118*
Jiangjun Fan,Hao Zeng,Yu Tian,Lianping Guo,Jun Jiang,Peng Ye

ICEMI20230095 **Neural Network based Threshold Voltage Model for 3D TLC NAND Flash** *125*
Debao Wei,Jingyuan Qu,Yu Song,Yanlong Zeng,Liyan Qiao

ICEMI20230099 **Two Dimensional Three-axis Magnetic Field Distribution Measurement by SERF Atomic Magnetometer using Spatial Light Modulation** *133*
Shuying Wang,Bo Li,Yujie Qian,Huimin Wang,Shuo Tang,Jixi Lu

ICEMI20230107 **A Fast Spectral Analysis Method Based on Sparse Signals in Requency Domain** *138*
Li Chen,Ruiyuan Ming,Yu Zhao,Chengyang Li,Maolin Lei,Peng Ye,Kuojun Yang

ICEMI20230120 **Study on The Key Parameters of Flow Element for Particle Samplers** *143*
Weiguang Liu,Shenhui Guo,Yaxiong Zou,Rui Ge,Congxian Wang,Xiaoqing Ren

ICEMI20230122 **Simulation Analysis of Pulsed Eddy Current Detection Signal of Thermal Barrier Coatings Thickness Measurement** *150*
Wenru Fan,Yong Chang

ICEMI20230123 **Research on 256QAM with Large Instantaneous Bandwidth** *157*
Lianping Guo,Xiaoyu Yu,Hao Zeng,Yu Tian,Peng Ye,Meng Wang,Xiao Liu

ICEMI20230135 **Research on Servo Control Chip of CPT Atomic Clock** *162*
Huijun Yang,Xiaobo Xue,Yutao Lv,Dandan Li,Chenfei Wu,Yan Cheng

ICEMI20230136 **Virtual Test Technology Based on Digital Twins for Satellite Intelligent Integrated Electronic System** *166*
Tongzhi Yang,Jiancheng Dang,Fang Dong,Jie Zhou,Sen Wang,Xinxin Zhang

ICEMI20230137 **Design of Dual-Channel Frequency Memory and Retransmission Module Based on AXI4+DDR3** *172*
Jun Jiang,Wei Xiang,Jiangjun Fan,Hao Zeng,Lianping Guo,Cong Hu

ICEMI20230139 **NX MCD-Based Unboxing Machine Model Design And Virtual Commissioning** *179*
Kaixuan Liu,Zhiqiang Zhang,Baohui Wu,Zedong Wu

ICEMI20230143 **Improved Double N-step Phase Shift Method(DNPSM) Based on Unwrapping before Fusion** *184*
Shuhuan Han,Yanxi Yang,Xinjie Li,Xubo Zhao,Xinyu Zhang,Wei Liu

ICEMI20230144 **Research on Broadband Complex Electromagnetic Environment Signal Simulation Technology Based on Channel Reconstruction** *189*
Zhengli Wang,Shulin Tian,Yu Tian,Hao Zeng,Jianhong Lyu,Meng Wang

ICEMI20230146 **Research On Electromagnetic Positioning System Based On Phase Resolution** *194*
Ling Lu,Shengjie Yan,Xiaomei Wu

ICEMI20230147 **Automatic Modulation Recognition Based on Dual-Channel Fusion Hybrid Neural Network** *201*
Yizhen Pan,You Zhou,Huanyong Ji,Chunhui Li

ICEMI20230150 **Design of TCAS Signal Generation Module Based on ZIF Architecture** *208*
Peng Zhang,Ping Wang

ICEMI20230153 **Research on the Dynamic Range of High End Vector Network Analyzer** *215*
Zhenchao Wang,Yubin Yang,Qinglong Zhang,Zunfeng Wang,Zongkui Tang

ICEMI20230154 **Improved Multipole Moment Electrical Heater for Magnetic Field Self-Suppression Based on Discrete Currents** *219*
Jixi Lu,Huimin Wang,Shuying Wang,Junpeng Zhao

ICEMI20230159 **Disturbance Analysis and Solution in High Precision Magnetic Torquer Testing** *224*
Jiakun Fan,Qiang Zhang,Qinchao Xu,Wenshan Wei,Yi Zhan,Bin Guan

ICEMI20230162 **Design and Implementation of Parallel Test System Based on Dual-ICA** *229*
Tianzhu Wen,Wenhai Li,Xi Tang,Wei Yang

ICEMI20230165 **Fully-adjustable Test Signal Generation Module with Multi-functional Outputs** *234*
Shuaihao Gao,Zaiming Fu,Dexuan Kong,Lingwen Zou,Liyu Zan

ICEMI20230168 **Review of FPGA-based Digital-to-Time Converters** *243*
Haoyang Dang,Han Yang,Dexuan Kong,Liyu Zan

ICEMI20230171 **Indirect Testing of Specifications in Analog Integrated Circuits Based on Black-Box Modeling** *253*
Jiawei Cao,Zhigang Wang,Hao Li,Houjun Wang,Yangbin Wei,Guangkun Luo

ICEMI20230180 **A Dedicated Memory Testing Processor Design** *260*
Kewei Deng,Houjun Wang,Ruiqi Zhu,Shibo Chen,Zhijian Dai

ICEMI20230185 **Pulse Signal Synthesis Scheme Based on Sub-band Decomposition** *267*
Lingwen Zou,Zaiming Fu,Dexuan Kong,Shuaihao Gao,Liyu Zan

ICEMI20230187 **Research on Optimization Method of Beam Shaping Based on Ultra High Sensitivity Magnetic Field Measurement** *274*
Xu Chen,Wupeng Wang,Jialin Mei,Hongli Li,Jingxuan Li,Jiankun Sun

ICEMI20230188 **Testing and Analysis of Electromagnetic Interference on BPL Near-field Timing Service** *278*
Feng Zhu,Ping Feng,Yingming Chen,Changhong Liu

ICEMI20230189 **Analysis of Intellectual Property Rights and Research on Development Strategies of Electronic Measuring Instruments** *283*
Li Liang,Dixing Li,Jiahe Yuan

ICEMI20230199 **Research on Magnetic Field Gradient Suppression Methods in Magnetically Shielded Room** *290*
Shuai Dou,Pengfei Song,Xikai Liu,Yabing Ji,Tong Wen,Bangcheng Han

ICEMI20230202 **Research on Resampling of Wideband Zero-IF Receiver** *295*
Chunming Liu,Yu Tian,Shulin Tian,Jiangjun Fan,Yubo Li,Shengyi Zhang, Xiaoyu Yu

ICEMI20230203 **Design and Implementation of Time-synchronizing System Based on White Rabbit** *301*
Liyu Zan,Dong Hou,Lujun Fang,Lingwen Zou,Shuaihao Gao

ICEMI20230205 **Dynamic Analysis Method of Measurement Uncertainty and Application in Pitot-Wind Tunnel Standard Device** *308*
Xing Liu,Weihui Zhou,Xin Chen,Yanfei Xing,Lulu Zhang

ICEMI20230208 **Linux-Based Oscilloscope Kernel Driver Software Design** *315*
Lianping Guo,Jiying Luo,Tian Yu,Shengyi Zhang,Chunming Liu,Xiaoyu Yu

ICEMI20230209 **Multi-Level Pattern Synthesis Based on FPGA and DAC** *320*
Qi Luo,Zaiming Fu,Li Chen,Hanglin Liu,Dexuan Kong,Haoyang Dang

ICEMI20230211 **Research on Detection and Simulation Method of Electric Data Acquisition Link Based on Fault Injection Technology** *326*
Kun Ma,Shuangshuang Li,Jianshun Ding,Aiqiong Ji,Jian Ma,Ziyuan Chen

ICEMI20230213 **Study for Power Delay Profile Validation of Channel Model** *331*
Xuenan Hu,Xuesong Jiang

ICEMI20230216 **Analysis of High Value Resistor Selection for Transimpedance Amplifier of Weak Current Measurement** *336*
Min Huang,Yujie Ji,Li Wang,Lei Qian,Wenjian Ma

ICEMI20230219 **Research on Linear Open Channel Current Meter Device** *342*
Kefu Zhang,Xu Xu,Lingshan Yang,Zheming Liao,Weihui Zhou,Xin Huang

ICEMI20230220 **Design of 1kW RF Power Amplifier for 230 MHz Wireless Private Network** *348*
Xingyi Nan,Jingchang Nan,Xinchun Li,Mifang Cong,Jianwei Ren,Yifei Wang

ICEMI20230221 **Compressed Gridless Frequency Estimation by Segmented Atomic Norm Minimization for Random Demodulation** *353*
Meiyu Fan,Bingtong Han,Jingchao Zhang,Liyan Qiao

ICEMI20230222 **Cascaded Compensation of Filter Phase Imperfections in Random Demodulation** *360*
Chenxi Bian,Jingchao Zhang,Lin Li,Liyan Qiao

ICEMI20230227 **Design and Implementation of Wavelet Time-Frequency Analysis for Multi-Domain Oscilloscope** *366*
Ruiyuan Ming,Peng Ye,Kuojun Yang,Kai Zhang,Maolin Lei,Yueting Wang

ICEMI20230228 **A Digital Oscilloscope Based Hardware Implementation Approach for Universal Memristor Emulators** *372*
Bo Xu,Jia Zhao,Kai Chen,Yifan Wang,Yanjun Yan,Libing Bai

ICEMI20230229 **Weak Signal Detection Method under Lévy Noise Based on Duffing Chaotic System and Fast Phase Judgment** *379*
Min Huang,Jinqi Gao,Yifan Wang,Lei Qian,Li Wang

ICEMI20230233 **Design of Multi-channel Signal Switching Circuit for High-resolution Thermocouple Acquisition System** *385*
Min Huang,Jinxu Yu,Hao Qin,Gen Qiu,Wenjian Zhou

ICEMI20230234 **BI-DAC System with Guard Band: Trade-off between Bandwidth and Aliasing Suppression** *391*
Yang Shen,Ke Liu,Weijie Liu,Guangkun Guo,Wenhao Zhao,Zaiming Fu

ICEMI20230235 **A Magnitude-Response Compensation Method in the FI-DAC-based Arbitrary Waveform Generator** *397*
Wenhao Zhao,Shulin Tian,Ke Liu,Yang Shen,Guangkun Guo,Qiong Wu

ICEMI20230239 **Pulse-width Trigger Method in 10GSPS Data Acquisition System** *404*
Chengyang Li,Shulin Tian,Peng Ye,Aijun Chen,Chuan Huang,Maolin Lei,Li Chen,
Kuojun Yang

ICEMI20230247 **The Adaptive Threshold-Based FFT Spectrum Stripe Edge Detection Method Used for Measuring The High-Frequency Vibration Parameters** *410*
Huinan Gong,Ligong Wang,Ming Yang,Qingsong Wu,Deguang Wang,Shengnan Zuo

ICEMI20230250 **A Review of The Development of Shock Tubes for Simulating Blast Waves** *416*
Yue Kang,Junlong Wang,Shizhong Zhang,Di Wang,Tian Ma,Huilin Wei

ICEMI20230251 **Support for MIMO Pre-Equalization in BI-DAC System: An Accurate Frequency Response Obtaining Method** *426*
Weijie Liu,Ke Liu,Yang Shen,Zaiming Fu,Guangkun Guo,Wenhao Zhao

ICEMI20230253 **Design of Self-Shielding Uniform Coils based on Bat Algorithm** *431*
Yimin Chen,Pengfei Song,Xikai Liu,Yueteng Jiang,Tong Wen,Bangcheng Han

ICEMI20230257 **5G Positioning Method Based on Finite Rate of Innovation Sampling** *436*
Zhaoyang Wang,Bingtong Han,Ning Fu,Zhiliang Wei,Zhenhua Liu,Liyan Qiao

ICEMI20230261 **Design and Implementation of GPU-Based Frequency Domain Analysis Function in the Digital Oscilloscope** *441*
Chuan Huang,Shulin Tian,Peng Ye,Qinchuan Zhang,Chengyang Li,Xuetao Liu

ICEMI20230263 **Design of Airborne Target Missile Testing System and Future Prospects** *446*
Yajun Meng,Jun Tu,Miao Xu,Sitong Chen,Liqun Wang

ICEMI20230274 **Synchronization Design Method For High-Speed Signal Transmission between FPGAs in DIGITAL Oscilloscope** *451*
Yu Zhao,Chaofan Wu,Peng Ye,Jie Meng,Huangwu Huang,Kuojun Yang

ICEMI20230278 **Design and Simulation Analysis of Bessel Digital Low-pass Filters** *457*
Guangyu Gu,Zhifeng Gao,Liansheng Liu,Weiyong Mao,Jun Liang

ICEMI20230280 **Implementation of LMS Algorithm Based Adaptive Filter Using Verilog HDL** *463*
Yuqing Liu,Hao Sun,Liansheng Liu,Yuntong Ma

ICEMI20230281 **A study of Passive Positioning Performance of Commercial Spectrum Monitoring Satellites Based on Frequency Measurements** *468*
Zongmin Liu,Chao Ma,Chao Zhou

ICEMI20230282 **Static and Dynamic Key Error Modeling for High-Speed Segmented Current Steering Digital-to-Analog Converter** *473*
Shengjian Liu,Liansheng Liu,Yu Peng,Shengwei Meng

ICEMI20230287 **Frequency Domain Detection Method Based on WOLA Structure with Matched Filtering** *479*
Maolin Lei,Peng Ye,Kuojun Yang,Chengyang Li,Xuefeng Dai,Li Chen,Ruiyuan Ming

ICEMI20230290 **Neural Network based Compensation Method for Frequency Response Mismatch in Wideband Quadrature Signal Reception System** *484*
Jie Meng,Yu Zhao,Peng Ye,Houjun Wang

ICEMI20230291 **Research and Practice on Computing Performance Measurement Methods for Processors** *489*
Weijun Zhong,Xiang Ren,Haitao Lu

ICEMI20230298 **Design of Real-time Vibration Environment Parameter Acquisition System** *495*
Jiahe Chen,Lingsong Di

ICEMI20230301 **Methodology for Jitter Analysis in Digital Storage Oscilloscope** *500*
Jinghao Chen,Peng Ye,Yu Zhao,Qinchuan Zhang,Chuan Huang,

Author Index *506*

Table of Contents

Vol.2

Sensor Technology and Applications ***1***

ICEMI20230004 **Research on the Conformity of Error value of Wind Direction Sensor Measurement in Automatic Weather Station** ***1***
Mingming Wei,Changchun Li,Jie Miao,Rui Jin,Taocheng Zhou,Debin Zheng

ICEMI20230017 **Attention-based Transformer Thermal Infrared Tracker** ***7***
Changan Wei,Qiqi Li,Baoqin Zhang,Shouda Jiang

ICEMI20230021 **An Adaptive DenseNet-based Method with Knowledge Distillation for Lightweight Infrared and Visible Sensors Fusion** ***14***
Junyu Wei,Shaojing Su,Zongqing Zhao,Xiaozhong Tong,Liushun Hu

ICEMI20230040 **Research on Hand-Eye Calibration Method Based on Monocular Vision and Accuracy Chain Analysis** ***19***
Zheng Liang,Tianjian Li,Min Huang,Huan Hu,Wensheng Wang

ICEMI20230046 **Design of Multi-sensor Array Payload for UAV Bridge Concrete Surface Crack Detection** ***24***
Aobei Chen,Dezhi Zheng,Huaizhi Yang,Dapeng Li,Rigen Hou,Hongrun Liu

ICEMI20230057 **Prediction Method of Soil Oil Concentration Based on Wavelet Kurtosis** ***30***
Ningchao Jiang,Min Jing,Bingqi Si,Zhaonan He

ICEMI20230069 **Relative Humidity Detection Method of Air-tight Storage Box for Weapon Equipment** ***35***
Haijiao Zhang,Yanyan Huang,Ziqiang Zhang

ICEMI20230073 **Optimization Design of Capacitive/Eddy Current Thermal Barrier Coating Thickness Composite Sensor** ***42***
Wenru Fan,Peizhi Yu

ICEMI20230082 **Planar Coil Oil Monitoring Sensor Research** ***48***
Zhenzhi Wan,Yanxue Wang

ICEMI20230083 **Application and Field Comparison of Water Quality Monitors in Unmanned Surface Vehicle** ***52***
Huimin Si,Ning Zhang,Yu Liu,Guoning Jing,Yongqin Ren,Pengcheng Yang

ICEMI20230084 **Parameter Selection Method for Accuracy Optimization of Time-grating Displacement Sensor Based on Orthogonal Experimental Design** *57*
Yu Wang,Yangyang Wang,Tianheng Zhang,Donglin Peng

ICEMI20230087 **Design and Simulation of Completely Centered Integrated 3d Cutting Force Sensor Based on Decagonal Ring** *63*
Jike Han,Peng Wang,Changming Zhang,Fan Yang,Chunlei Peng,Nan Wang, Yingxuan Liang,Zhipeng Yan

ICEMI20230102 **Recognition of Coal and Rock Properties for Coal Mine Drilling Rig Based on Electromagnetic Wave Detection** *68*
Yuan Liu,Lei Si,Zhongbin Wang

ICEMI20230103 **Study on Temperature Influence of Infrared Gas Composition Detection** *74*
Hongjie Yang,Chunyang Yu,Yichun Bai,Yuanqi Wang,Lulu Zhang

ICEMI20230104 **Design and Optimization of Elastic Structure of Miniature Six-Dimensional Force/Torque Sensor** *79*
Yuqiang Dai,Peng Wang,Jike Han,Zhipeng Yan

ICEMI20230114 **Research on Intelligent Water Meter Based on Non Magnetic Sensor and NB-IoT Communication Technology** *84*
Xun Liu

ICEMI20230117 **Study on the Capacity Measurement Method of Large LNG Film Tanks** *88*
Xianlei Chen,Zenan Wu,Haolei Shi,Huizhong Xu,Huadong Hao,Yeyong Wang, Zhe Zhang,Junxue Chen,Zhenqian Shen

ICEMI20230134 **Design of Depth Measurement System for Seafloor Sediment Temperature and Salinity** *94*
Wei Liu,Runhao Chen,Xiaohui Liang,Haifeng Zhou,Dapeng Zou,Zhiwei Shi

ICEMI20230142 **Research on Portable Resonant Density Meter** *98*
Zeyu Zhang,Jintao Wang,Jingyue Zhang

ICEMI20230145 **Research on Fully Automatic Flowmeter Cleaning Device** *102*
Xianlei Chen,Yeyong Wang,Le Hu,Haolei Shi,Zenan Wu,Huizhong Xu,Kewei Wang, Junxue Chen,Zhenqian Shen

ICEMI20230151 **Research and Application of Error Calibration Methods for HMP155 Humidity Sensor** *107*
Xindi Li

ICEMI20230152 **The Positive Pressure pVTt Gas Flow Standard Device Using Natural Gas as the Medium** *110*
Chunyang Yu,Hongjie Yang,Lulu Zhang,Yuanqi Wang,Xing Liu.Menglan He

ICEMI20230161 **Error Experiment of 600-2000A/5A Current Transformer Based on Improved Core Material** *114*
Yuan Zhao,Shaolei Zhai,Xingda Li,Tao Luo,Xi Dong,Can Ding

ICEMI20230181 **Impedance Ice Sensor Capable of Self-compensating Temperature Drift** *118*
Kang Gui,Hongfei Bai,Ziyu Liu,Junfeng Ge,Lin Ye

ICEMI20230186 **Finite Element Design of Biomolecular Sensor Chip Based on QCM/LSPR Dual Technology** *123*
Ye Miao,Jin Zhu,Bishi Zhao,Ling Qin,Wenjing Cao,Kailai Jin

ICEMI20230191 **Flexible PDMS Pressure Sensor Based on Mutual Inductance Coil** *129*
Yuming Hong,Zimo Li,Weitong Zhang,Zhe Sun,Wei Bin,Diyu Zhu,Zhijian Liu

ICEMI20230192 **Research on Quadrature Suppression Method of Large Stiffness MEMS Disk Resonator Gyroscope Based on Axial Reconfiguration** *134*
Hao Tang,Yi Zhou,Tong Zhou

ICEMI20230194 **A Baseline Modeling and Anomaly Detection Method for Inertial Navigation System Based on Integrated 1DCNN** *142*
Wenjing Mo,Chuanjin Han,Yuan Wang

ICEMI20230195 **GA-PNN Based Multi-Gas Sensor Temperature Modulation Mode Study** *148*
Wenjie Zhao,Xiaodong Zhang,Zi'ao Hu,Yinsheng Chen,Ruitian Yan,Dan Xu

ICEMI20230196 **Angle Measurement Method Based on Cross-Orthogonal Hall Sensor** *153*
Xiao Chen,Xiran He,Ying Zhang,Bo Gao

ICEMI20230206 **Development of Fiber Grating Crack Gauge Based on New Temperature Compensation Structure** *159*
Xiang Wang,Juntao Wang,Guowei Liu,Qifei Wang,Baoyu Yuan

ICEMI20230207 **Three-Degree-of-Freedom Absolute Displacement Sensor Based on Planar Magnetic Grid** *165*
Zhen Zhang,Lei Wang,Bingzhang Cao,Haoxuan Zeng

ICEMI20230224 **Anti-high Decibel Keyword Spotting System Based on Flexible Sensor** *170*
Shiji Yuan,Qihang Gao,Ying Sun,Dezhi Zheng

ICEMI20230242 **Optimal Design of the Self-shielded Shim Coil Combined with Target Points** *176*
Kun Wang,Danyue Ma,Jixi Lu,Xu Zhang,Shuying Wang,Chenning Lu,Jing Wang

ICEMI20230252 **Research on Intelligent Vehicle Data Fusion Technology Based on Multiple Sensors** *184*
Zhiqiang Gao,Kaixin Tang,Weitong Ji,Dan Su

ICEMI20230259 **Online Analyzer for Monitoring of Heavy Metals in Groundwater Using Diffusive Gradients in Thin Films and X-Ray Fluorescence Techniques** *189*
Yingqi Sun,Yining Wang,Guanjun Liu,Yonggang Luo,Wenke Qi

ICEMI20230260 **Design and Application of Ultra-Small Optical Fiber Spectrometer in Multi-Parameter Water Quality Online Analyzer** *194*
Yinghua Yuan,Yingqi Sun,Xinchun Lu,Wenke Qi,Lijiang Lei

ICEMI20230266 **Research on Transient Thermal Measurement Technology Based on CCD Thermoreflectance Imaging System** *199*
Qiyan Yin，Dazheng Wang，Yingying Gao，Libing Zheng

ICEMI20230276 **Design of Thermal Conductivity Gas Sensor with Silicon Cap** *204*
Changchun Wang,Binbin Jiao,Xin Liu,Chengyuan Zhao,Gangqiang Wu,Ruiwen Liu

ICEMI20230279 **Miniaturized Optical Fiber Turbidity Sensor for Turbidity Monitoring in Constricted Space** *209*
Yonggang Luo,Yijun Cao,Guanjun Liu,Yingqi Sun,Jun Zou,Wenke Qi

ICEMI20230286 **Debris Material Identification Based on EMD-SVM** *214*
Chenyong Wang,Hongpeng Zhang,Guobin Li,Shengzhao Wang,Shuyao Zhang,Zhengxi Cai

ICEMI20230293 **Dynamic Performance Assessment Technique of Satellite Star Sensor Using In-Orbit Data** *219*
Ying Xu,Jie Zhou,Yuesha Dong,Ruzhi Zhou,Chong Wang,Fang Dong

ICEMI20230295 **Design and Fabrication of a Miniature Four-axial Piezoresistive Force/torque Sensor with MEMS Technology** *225*
Jianlei Wang,Shuyi Xu,Yayun Zhang,Zichen Zhang,Shijia Jiang,Wei Zhang

ICEMI20230300 **Design of Thunder Imaging System and Observation for Ground and Intracloud Lightning Flashes** *230*
Shi Qiu,Lihua Shi

Intelligent Manufacturing and Online Monitoring *235*

ICEMI20230006 **Research on Intelligent Fault Diagnosis Method for Rolling Bearings Based on Multi-Feature Fusion of CWT-2D-CNN** *235*
Yuanyuan Sun,Bin Liu,Xin Wen,

ICEMI20230007 **Online Wind Speed Measurement System and Test Method for Chemical Scene** *240*
Jiajiu Diao

ICEMI20230016 **Indirect Measurement Method of Energy Storage Lithium-ion Battery Electro-Chemical Parameters** *244*
Zhiheng Yi,Yuchen Song,Datong Liu

ICEMI20230020 **Position and Attitude Finite-Time Tracking Control of a VTOL Aircraft Using Adaptive Global Fast Terminal Sliding Mode Control** *250*
Xiongfeng Deng,Yiqing Huang,Binzi Xu,Liang Tao

ICEMI20230023 **Fault Identification in Distribution Network by Fusing Deep Residual Shrinkage Networks** *257*
Puan Duan,Fengyi Liu,Yingqiao Shi,Lianfang Zhang,Ben Zhang,Ya He

ICEMI20230033 **Optimized Lightweight PCB Real-Time Defect Detection Algorithm** *262*
Dahua Li, Ao Xu,Xiao Yu

ICEMI20230034 **Design and Implementation of Remote Electric Energy Monitoring at the Plant Level** *270*
Fenglei Wang,Xiaoyuan Feng,Weili Cai,Jiqiang Li

ICEMI20230042 **Airspeed Anomaly Detection of UAV Based on Flight Mode Adaptive With Noise Margin** *275*
Rui Li,Jie Huang,Ting Zhu,Zhaohua Qin,Tao Li,Xiang Huang

ICEMI20230043 **Underwater Multi-Parameter Magnetic Anomaly Detection System Carried by Autonomous Underwater Vehicle and Its Data Preprocessing Method** *280*
Zhen Wang,Shengwei Liu,Yanguo Guo,Yongpeng Wu,Yi Wang

ICEMI20230045 **Method for Constructing Fault Knowledge Graph for PHM of Aircraft Power System** *286*
Xiangzhen Meng,Bo Jing,Shenglong Wang,Jinxin Pan,Xiaoxuan Jiao,Yifeng Huang, Shaoting Pei

ICEMI20230055 **Development and Optimization of Cavity Attenuated Phase-Shift Spectroscopy Technique for Measuring Ambient Nitrogen Dioxide** *292*
Dongliang Wang,Lei Wang,Xiao Bi

ICEMI20230056 **Vibration Signal Denoising for Coal-gangue Impacting the Tail Beam of Hydraulic Support Based on Improved ALO and VMD** *298*
Jialiang Dai,Lei Si,Zhongbin Wang

ICEMI20230076 **Design of Control Module for Marine Biogenic Monitoring System in Nuclear Power Plants** *304*
Hongli Zhou,Yabin Men,Lei Yang,Junyi Wang

ICEMI20230078 **Anomaly Detection for Multivariate Telemetry Series of Satellite with Improved HVAE** *309*
Xiaolong Zhu,Jingyue Pang,Xiumei Liang

ICEMI20230086 **Equalization System Design Based on CPU+GPU Heterogeneity** *315*
Guangkun Luo,Yumeng Liu,Yangbin Wei,Jiawei Cao,Hao Li,Zhigang Wang

ICEMI20230090 **Design of Inter-Satellite Link Between Multifunction Test Sat and Tiantuo 5** *324*
Xianbin Li,Jianyun Chen,Zhixi Yang,Chao Zhou,Chao Ma,Suyang Liu

ICEMI20230091 **Design of Reliable Estimator for the Number of Missing Tags** *329*
Jie Bao,Bin Wang

ICEMI20230096 **Collaborative Design and Virtual Commissioning of Automated Pharmacy Based on Digital Twin** *335*
Baohui Wu,Zhiqiang Zhang,Kaixuan Liu,Zedong Wu

ICEMI20230106 **A Flexible Wave Velocity Measurement Method Applied to Low Pressure Load Condition** *341*
Bing Xue,Deren Kong,Chunyan Zhang,Zhenyu Xiong,Zijun Huang

ICEMI20230108 **Fabric Defect Detection Based on FCN Uncertainty Feature** *346*
Yang Li,Laihu Peng,Xudong Hu

ICEMI20230109 **A Single-Agent Reinforcement Learning Fault Diagnosis Method for Wind Turbine Bearings** *351*
Zhe Kong,Zhiwei Kou,Liqiang Liu,Yongsheng Qi,Yanjun Qiao,Gaole Jing

ICEMI20230110 **Stream of Variation Modeling Method for Turbine Blade in the Investment Casting Process** *356*
Tianyu Sun,Kuidong Huang,Fuqiang Yang,Hao Dou,Zhixiang Li,Wenyu Ding

ICEMI20230116 **Bearing Fault Diagnosis Based on Auto-Encoder** *361*
Huijun Han,Jin Mao,Yahui Cui

ICEMI20230124 **Design of Test and Control Software for Line Laser Three-Dimensional Gear Measuring Instrument** *366*
Meichuan Li,Zhaoyao Shi,Yanqiang Sun,Bo Yu,Hao Lv

ICEMI20230125 **Design of Measuring Control Unit of Antenna Pattern of High Frequency Surface Wave Radar** *376*
Xinpeng Wang,Dongliang Zhang,Xingmin Li,Lishan Ma,Bin Wang

ICEMI20230127 **Inertial Navigation Trajectory and Attitude Prediction Based on Improved Hidden Markov Model** *383*
Zhengyang Gao,Shuangchao Ge,Jie Li,Kaiqiang Feng

ICEMI20230133 **Robot Mechanical Fault Diagnosis Method Based on Deep Learning** *390*
Hui Fang,Yuxiu Wu,Xinyu Ling

ICEMI20230149 **Network Intrusion Detection Method Based on CGAN and CNN-BiLSTM** *396*
Xinyi Liang,Hongyan Xing,Tianhao Hou

ICEMI20230156 **Research on Four-Jaw Gripping Center-Positioning Gear Visual Measurement System** *401*
Shan Zhi,Minghui Wei,Zhidong Huang,Yanting Hao,Haotian Shi

ICEMI20230164 **Design and Implementation of Miniaturized Unmanned Vehicle Tire Pressure Detection System Based on MCU** *407*
Zhaoyang Dang,Bei Sun,Shudong Yuan,Zhen Zuo

ICEMI20230167 **Design of IoT-based Aquaculture Water Quality Parameter Monitoring System** *412*
Weiheng Chen,Mingwu Wang,Xiaozhou Liao,Zedong Wu

ICEMI20230170 **Surface Anomaly Detection Based on Multi-scale Feature Propagation and Normalized Flow** *417*
Dakan Ying,Jian Xu,Yuchun Huang

ICEMI20230177 **Tire Radiogram Defect Detection Based on ESSNet** *423*
Yunting Liu,Mingxiao Tan,Zhongwen Ge,Yu Gao

ICEMI20230179 **Research on Application Development of Ultrasonic Data Acquisition System for Rail Flaw Detection** *429*
Haibin Yuan

ICEMI20230190 **Differentiated Time-Series Reconstruction for Anomaly Detection of Spacecraft Using Siamese Neural Network** *434*
Zhenyu Li,Yuchen Song,Ruzhi Zhou,Xiyuan Peng

ICEMI20230198 **Design of New Power System User Side Terminal Flexible Interactive Function Detecting System** *440*
Qiang Guo,Hao Meng,Xiangxin Nie,Shuyang Wang,Yuting Xu,Penghui Ding

ICEMI20230217 **Modeling and Simulation Analysis of Novel Magnetic Control Switch and Mechanical Characteristics** *445*
Yang Yue,Chunhui Zhang,Cuicui Jin

ICEMI20230225 **Design and Performance Analysis of UWB Radome** *449*
Yijie Wang,Chen Wen,Xin Gao,Kai Zheng,Shuo Wang,Huadong Tian

ICEMI20230231 **Research of Rolling Bearing Fault Diagnosis Method Based on BO-DK-ELM** *454*
Xinhua Nie,Yufeng Qin,Liang Qin,Shangcong Li

ICEMI20230256 **Surface Defect Detection of Nuclear Fuel Pellets using Structured Light and Convolutional Neural Network** *460*
Fanghui Zhang,Fengyu Li,Xinxin Xu,Zihan Guo,Bin Zhang,Bin Zhang

ICEMI20230258 **Microscopic Modelling for EMAT in Ferromagnetic Materials** *465*
Youtian Wang,Shen Wang,Yuxuan Zhao,Haihan Li,Songling Huang

ICEMI20230264 **Uncertainty Quantification Based Health Diagnosis for Lithium-Ion Batteries Under Different Operating Conditions** *470*
Weiqi Zhang,Yuhang Du,Yuchen Song,Datong Liu,Yu Peng

ICEMI20230265 **Design and Implementation of Telemetry Simulation Equipment for Target Missile** *476*
Sitong Chen,Yajun Meng,Jun Tu,Longfei Wu,Xiaomin Chen,Tianxu Qi

ICEMI20230271 **Research on Multi-spectral Temperature Measurement Method based on Emissivity Model Recognition Optimization** *480*
Qing Yang,Zhiwei Chen,Liwei Chen,Tong Wang,Ying Cui,Shan Gao

ICEMI20230292 **Fault Prediction of P-R-N-D Shifting Force Based on BP Neural Network** *487*
Shuxian Wang,Shiyou Liu,Zuqiang Su,Xin Wang,Linlin Liu,Hang Zhu

ICEMI20230302 **Remaining Life Prediction Method of Rolling Bearing Based on TD3 Optimization Model Updating Strategy** *492*
Yujing Wang,Guangpeng Jiao,Shouqiang Kang,Jinbao Xie,Yulin Sun

Author Index *499*

Table of Contents

Vol.3

Image Processing and Visual Inspection ***1***

ICEMI20230011 **Application of Image Mosaic in Defect Detection** ***1***
Zhongyang Xie,Chengyu Yang

ICEMI20230013 **Research on the Monochromatic Soft X-rays Radiation Facility Using CCD** ***6***
Lipeng Fan,Siming Guo,Tao Yu,Xing Zhou,Shikui Huang,Ziyao Shu

ICEMI20230018 **Surface Extraction and Boundary Detection Based on DBSCAN Clustering in 3D Point Clouds** ***11***
Hui Chen,Tingting Xie,Muhammad llyas Menhas,Bilal Ahmad,Heping Huang,Qilin Li

ICEMI20230019 **Improved 3D Reconstruction of PCBA Using FPP:Specular Area Reconstruction & Shadow Area Removal** ***16***
Long Ma,Shengwei Guo

ICEMI20230022 **Improving Infrared Pedestrian Detection by Sharing Visible Light Domain Information with Enhanced UNet and YOLO Models** ***21***
Zongqing Zhao,Shaojing Su,Junyu Wei,Xiaozhong Tong,Liushun Hu

ICEMI20230024 **Ultra-wideband 3D Indoor Positioning with Wired Clock Synchronization** ***26***
Yuanxi Wang,Bo Cui,Luoshenhui Li

ICEMI20230035 **Algorithm Design of Environment Map Construction for Inspection Robots Based on Data Fusion** ***32***
Gaole Jing,Zhiwei Kou,Liqiang Liu,Yongsheng Qi,Zhe Kong,Xiaoming Cui

ICEMI20230053 **Water Stress Analysis of Strawberry Based on Color Space Model** ***38***
Bingqi Si,Min Jing,Ningchao Jiang,Hengtong Han

ICEMI20230054 **Research on Machine Vision Based Thread Parameter Compensation Algorithm** ***45***
Zhichao Yu,Manlong Chen,Kui Lin,Lei Yang

ICEMI20230059 **Research on Automatic Adjustment System of Pipette Capacity Based on Machine Vision** ***50***
Haitao Wang,Aiju Li,Qiang Han,Liang Dong,Meng Wen

ICEMI20230072 **DAACN: Dense Atrous Asymmetric Convolutional Network for HIFU Treatment Target Region Extraction** *54*
Jintao Zhai,Ang Li,Feng Tian,Zhiwei Jiang,Shengyou Qian,Xiao Zou

ICEMI20230101 **Correction of the Beam Hardening Artifacts in CT Images Using Pix2pixGAN Network** *60*
Legeng Lin,Shunli Wang,Zhisheng Wang,Zihan Deng,Zongfeng Li,Junning Cui

ICEMI20230118 **Cardiac Output Monitoring Based on ROI-focused 3D Electrical Impedance Tomography Imaging** *65*
Ge Gao,Peng Suo,Xu Bai,Jiangtao Sun,Lijun Xu

ICEMI20230121 **High-speed Signal Jitter Measurement Method Based on Bit Error Rate Eye Diagram** *71*
Wanyu Yang,Shulin Tian,Zhijian Dai

ICEMI20230126 **A Small Target Detection Method on Sea Surface Based on Markov Transition Field** *78*
Ru Ye,Hongyan Xing,Xing Zhou,

ICEMI20230132 **Weld Image Evaluation Model Using Improved Loss Function** *83*
Zhihao Wang,Chi Zhang,Zenglin Dang,Zhengxiang Sun,Haotian Chen,Qingyu Tang, Haoran Sun,Zhijian Liu

ICEMI20230141 **Small Target Detection Method on Sea Surface Based on T-GCN** *88*
Xing Zhou,Hongyan Xing,Ru Ye

ICEMI20230155 **Study on Automatic Positioning of Medium and Small Modular Internal and External Gears** *93*
Shan Zhi,Lin Fan,Zhidong Huang,Chuhan Zhao,Shijun Yu

ICEMI20230157 **A Kind of Research on the Visual Inspection Device of Gantry Aircraft Parts** *98*
Shan Zhi,Jiahe Chen,Zhidong Huang,Shiqi Qu,Yaqin Zhu

ICEMI20230160 **Research on Total Radiation Dose Detection by Chromaticity Based on Radiochromic Film** *103*
Shuai Xu,Junyu Hou,Yuhe Li

ICEMI20230163 **Design of Anti-interference Defibrillator with Short Delay** *108*
Fanchang Meng,Bozhi Ding,Jiali Wang,Feng Xu,Yuguo Chen,Ke Li

ICEMI20230173 **Research of 808/980 nm Dual-Wavelength High-Power Laser Therapy Device** *113*
Zhiyuan Jin,Pengcheng Wang,Jinhu Wang,Bo Peng,Wei Xia

ICEMI20230197 **Multivariate Estimation of Cardiac Output Using Photoplethysmography** *118*
Yuchen Huang,Ling Peng,Bo Gao,Ming Gong

ICEMI20230204 **Inverse Electromagnetic Imaging via Time-Reversal Method of Moments** *124*
Chuangfeng Zhang,Kuang Luo,Ming Zhang,Shaolin Liao

ICEMI20230212 **Improved YOLOv7 Fusion Detection Line for Swimming Pool Drowning Detection** *129*
Bing Bai,Lintao Chen,Xiaozheng Li

ICEMI20230214 **Research on Workpiece Corner Detection Method based on Combination Method Image Feature Points** *135*
Dongsheng Han,Tianjian Li,Min Huang,Huan Hu,Wensheng Wang

ICEMI20230230 **Synchronized Joint Airborne and Ground-based Regional Positioning System** *140*
Xiye Guo,Xiaoyu Li,Yuqiu Tang,Kai Liu,Zhijun Meng,Jun Yang

ICEMI20230237 **A Traffic Police Gesture Recognition Method Based on Nine-axis IMU and Random Forest Algorithm** *146*
Hao Feng,Kang Xu,Gang He

ICEMI20230246 **PIV Image Background Denoising Algorithm Based on Improved Otsu Thresholding** *153*
Mengbi Xu,Gang He,Jun Wen

ICEMI20230275 **Local Color Space Correction for Color Difference in Machine Vision Imaging Based on Polynomial Regression** *162*
Siyu Guo,Genyin Huang,Yi Shi,Bo Dang,Yuanyuan Cui,Jihong Liu

ICEMI20230277 **Element Defective Sample Augmentation Method Based on Improved DCGAN** *167*
Yi Shi,Bingxiang Hou,Jiawei Liu,Aoyu Liu,Siyu Guo,Jihong Liu

ICEMI20230283 **Mixed Precision Quantized Neural Network Accelerator for Remote Sensing Images Classification** *172*
Haijun Zhang,Bowen Yao,Wenyi Shao,Xiuwen Xu,Liansheng Liu,Yu Peng

ICEMI20230285 **Software and Hardware Co-design Method for Ship Detection in Remote Sensing Images** *177*
Tongrui Zhang,Wenyi Shao,Liansheng Liu,Fei Guo,Yu Peng

ICEMI20230299 **Design of Wearable sEMG Acquisition Sensor and Data Gathering** *182*
Yanxu Sun,Junning Cui

Metrology and calibration *188*

EM20230001 **Calibration Device for Imaging Characteristic Parameters of Infrared Thermal Imager** *188*
Yongjie Fu,Jing Luan

EM20230002 **Research on Calibration Technology of Optical Power Meter** *195*
Tianyu Liu,Xu Bai

ICEMI20230027 **Research on Delay Calibration Method of Software Receiver Based on RF Direct Sampling** *202*
Tingting Kang,Yuetong Wang,Lei Zang,Yan Liu,Yan Huang

ICEMI20230028 **Research on SiPIN Detection Efficiency Calibration** *206*
Shikui Huang,Siming Guo,Ziyao Shu,Xing Zhou,Lipeng Fan

ICEMI20230039 **An Intelligent Quantitative Evaluation Method of Baked Goods Quality Based on Vision** *211*
Rongbo Fan,Weiwei Qi,Qing Yao,Hong Hou,Jianhua Yang

ICEMI20230066 **Research on Measurement and Evaluation Technology of Thread Pitch Diameter Based on Extended Virtual Three Ball Method** *218*
Kui Lin,Manlong Chen,Zhichao Yu,Binyang Zou

ICEMI20230071 **Inspection Method for Standard Conformance of Two-Way Satellite Time Comparison Terminal** *223*
Dandan Li,Xueyun Wang,Yanping Qin,Huijun Yang,Hang Yi

ICEMI20230075 **Calibration Method for Light Screen-Based Speed Measurement Devices for Projectile** *228*
Lei Du,Qiao Sun,Jie Bai

ICEMI20230119 **Novel Intelligent Calibration System for Automobile Engine Speed Measurement Based on Visual Recognition** *233*
Chenxin Zhao,Cunbin Zhao,Jianwen Shao,Xi Chen,Jian Li,Minjie Feng,Zhou Fang

ICEMI20230131 **A Metering Device for DC Energy Meters** *239*
Yan Liu,Yang Gu

ICEMI20230158 **High-Accuracy Method for Delay Calibration of UTC(NTSC) Replicating Device** *244*
Duosheng Fan,Songyue Han,Ruiqiong Chen,Zhixiong Zhao,Ya Liu,Feng Zhu

ICEMI20230166 **Evaluation Method of Electricity Metering Equipment R&D Ability based on NQI** *249*
Dixing Li,Ziyuan Chen,Li Liang,Jian Ma,Xing Wei,Yue Chen

ICEMI20230169 **Uncertainty Evaluation of Oscilloscope Measurement Waveform Based on Covariance Matrix** *254*
Jiangmiao Zhu,Junyu Chen,Kejia Zhao,Mingfan Cheng,Yufen Sun

ICEMI20230174 **Research on Components Used for Flow Calibration of Inhalable Particulate Matter Sampler** *259*
Shugu Song,Weiguang Liu,Xiaoni Zhang,Shenhui Guo,Qin Li,Zewu Zhang

ICEMI20230175 **Measurement Method of Pulsation Micro Flow Based on Poiseuille Law** *267*
Shugu Song,Xiaoqing Ren,Weiguang Liu,Shenhui Guo,Chen Xie, Zewu Zhang

ICEMI20230183 **Method of Measuring Critical Flow Venturi Nozzle with Piston Gas Flow Standard Device** *274*
Lingshan Yang,Lulu Zhang,Weihui Zhou,Yang Xiang,Xing Liu,Yichun Bai

ICEMI20230184 **Passive Piston Gas Flow Standard Device** *279*
Lulu Zhang,Xing Liu,Chunyang Yu,Wei Liu,Lingshan Yang,Hongjie Yang

ICEMI20230215 **Comparative Study on Anemometer Calibration of Two Kinds of Wind Tunnel Devices with Different Structures** *284*
Weihui Zhou,Xing Liu,Lulu Zhang,Wei Liu,Lingshan Yang

ICEMI20230268 **Study for Ultra-long-distance Remote Reproduction of Standard Time Based on Rubidium Atomic Clock** *289*
Yuwei Li,Ruiqiong Chen,Yanrong Xue,Ya Liu

ICEMI20230289 **Effect of Flow Rate or Pressure on The Potential of Tungsten Oxide Placed in Flowing Liquid** *294*
Yuanfang Mao,Yizhang Wen,Min Liao

ICEMI20230296 **Analysis of Metrology and Data Management of Satellite Specialized Comprehensive Test System** 299
Lingfeng Yu,Liang Zhong,Sen Wang,Fang Dong,Dongshuo Wang

Machine Learing and Intelligent Computing 304

ICEMI20230014 **A Novel Motion Compensation Framework for Micro UAV FMCW SAR** 304
Fatong Zhang,Shangqu Yan,Yaowen Fu,Wei Yang,Wenpeng Zhang,Ruofeng Yu

ICEMI20230032 **Data-Flow Modeling of SDRAM with Bank Group in Sequential Access with Intermittent Address Jumps Mode** 309
Gongbai Xiao,Yindong Xiao,Ke Liu,Zaiming Fu,Houjun Wang

ICEMI20230061 **Modulated Signal Open-set Identification of Complex Convolutional Neural Networks Combined with Incremental Learning** 314
Jinwei Wang,Xiaoqiang Qiao,Jiang Zhang,Chengyuan Sun,Fenghui Liu

ICEMI20230062 **Test Method of Projectile Drag Coefficient for Interior Ballistic** 321
Tushun Huang,Chao Zhai,Cheng Wang

ICEMI20230064 **Fourth-order Cumulants-based Eigen Decomposition Techniques for Loran-C Skywave Estimation** 325
Zixiong Ye,Mingwei Lei,Meng Shi

ICEMI20230070 **Research on Soft x-Ray Polarimetry Based on Bragg Diffraction** 330
Xing Zhou,Siming Guo,Xiaoyu Qie,Lipeng Fan,Shikui Huang,Ziyao Shu

ICEMI20230079 **Research on Intelligent Maintenance Decision for Flexible Electronic Manufacturing Equipment Based on Deep Reinforcement Learning** 335
Yaohua Deng,Zilin Zhang,Hao Huang,Xiali Liu,Jiamin Tang

ICEMI20230080 **Research on Standard Time Replication Method Based on Multi-Reference Terminal Fusion** 339
Ruiqiong Chen,Xin Fu,Ya Liu,Xiaohui Li,Zhixiong Zhao,Yuwei Li

ICEMI20230085 **Improved Timing Synchronization Algorithm for Linear Modulation Signals** 343
Shuo Wang,Kuojun Yang,Li Chen,Qinchuan Zhang,Huiqing Pan,Peng Ye

ICEMI20230097 **Data-driven Flexible Electronic Processing Equipment Performance Degradation Trend Forecast** 352
Yaohua Deng,Jiamin Tang,Zhifeng Shao,Xiali Liu,Zilin Zhang

ICEMI20230100 **Steel Defect Detection Based on Attention Mechanism** *357*
Wei Li,Xiaomin Yao,Wenwen Yang,Yifei Li

ICEMI20230105 **Research on Active Disturbances Rejection Control Strategy of Water-lubricated Bearing Lubrication System** *362*
Jialong Gao,Nan Wang,Yujie Wei,Chengfeng Li

ICEMI20230111 **Data Augmentation Method for Meter Instance Segmentation Under Data Balancing Strategy** *367*
Zhaolin Wang,Lianfang Tian,Qiliang Du,Zhiyao Zhao,Yi An,Zhengzheng Sun

ICEMI20230112 **The Characterization of Near-Field Microwave Radiation Via Scanning Probe Microscopy** *374*
Tao Pei,Yifan Xue,Caihui Wang,Guoliang Wei,Huanfei Wen,Jun Tang,Jun Liu

ICEMI20230128 **Novel GNSS Anti-spoofing Technique Using Antenna Array Processing** *379*
Yuqing Zhao,Feng Shen,Dingjie Xu,Zhen Meng

ICEMI20230129 **Traffic Prediction Method for Time Series Networks Based on ARIMA-LSTM Model** *384*
Tianhao Hou,Hongyan Xing,Xinyi Liang

ICEMI20230138 **Soft Fault Diagnosis Technology of Filter Circuit Based on Heterogeneous Ensemble Learning** *389*
Chunhui Li,Fei Li,Luo Zhao,Yulin Ma,Yizhen Pan

ICEMI20230193 **UAV Anomaly Detection Using Fleet Data Based on DBSCAN-MSET Method** *395*
Chang Geng,Shenghua Xiang,Na Wang,Yuan Wang

ICEMI20230200 **Research on Self-learning Flaw Detection in Ultrasonic C-scan Non-destructive Testing** *401*
Zhipeng Li,Yibing Shi,Yanjun Li,Wei Zhang,Ao Qiu

ICEMI20230201 **Denoising Algorithm for Pulsed Eddy Current Response Signals Based on Empirical Mode Decomposition** *406*
Bin Luo,Yibing Shi,Wei Zhang,Yanjun Li

ICEMI20230210 **Research on Magnetic Field Compensation Method Based on Fuzzy PI Control for Low Remanence in Magnetic Shielding Room** *411*
Jiqiang Tang,Yunfei Fang,Xikai Liu,Shengyi Shangguan

ICEMI20230226 **Pedestrian Heading Estimation Based on F-LSTM Neural Network** *417*
Faming Liu,Kai Liu,Xiye Guo,Guokai Chen,Peng Zhou,Jun Yang

ICEMI20230236 **A Novel Solution to the Inverse Kinematics Problem in Robotics using Conditional Invertible Neural Networks** *423*
Sikai Wang,Gang He,Kang Xu

ICEMI20230238 **PSO-based Volterra Tensor Network for Predicting Short Circuit Degradation of p-GaN HEMT** *433*
Wenjuan Mei,Bingjie Xiong,Jian Zhang,Yuanzhang Su,Zhen Liu,Qi Zhou

ICEMI20230240 **A Stigmergic Optimization Method for Distributed Collaboration in Satellite Swarm** *439*
Sichuang Ren,Xiye Guo,Xuan Li,Xiaotian Ma,Yang Li

ICEMI20230241 **A Method of Ferromagnetic Object Identification based on Magnetic Sensor and Machine Learning** *446*
Wei He,Kang Xu,Gang He

ICEMI20230243 **Application of Turbidity Compensation Model in Total Nitrogen Water Quality Analyzer** *452*
Wenke Qi,Wenxin Chen,Guanjun Liu,Yingqi Sun,Yonggang Luo

ICEMI20230245 **Hierarchical Resource Scheduling Method for Satellites Combining Particle Swarm Optimization and Heuristic Factors** *457*
Yang Li,Xiye Guo,Xiaotian Ma,Sichuang Ren,Jun Yang

ICEMI20230254 **Visual Prediction Method for Meet Goose Body Parameters based on Machine Learning** *463*
Yinglong Wang,Bei Sun,Zhaoyang Dang,Can Li

ICEMI20230255 **Constellation Traffic Control mode Based on Data Mining and Risk Assessment** *473*
Xi Chen,Shuo Wang,Haopeng Zhang,Ping Yang

ICEMI20230269 **Hybrid 2D-3D Modeling Method for Electromagnetic Acoustic Phased Array** *479*
Yuxuan Zhao,Shen Wang,Youtian Wang,Haihan Li,Songling Huang

ICEMI20230270 **Solving Tracking Challenges: Lightweight Algorithm for Single Pedestrian Tracking on Nano-UAVs** *486*
Jingtao Zhou,Lei Feng,Haolin Chen,Bing Liu

ICEMI20230284 **Evaluation of In-Orbit Index System for Satellite Flywheels** *493*
Sen Wang,Fang Dong,Xiumei Liang,Xin Zhang,Zhenhao Tan,Chong Xie

ICEMI20230288 **Research on Machine Learning and Signal Processing of IQ Signals** *498*
Xiaoyu Yu,Hao Zeng,Yu Tian,Lianping Guo,Peng Ye,Meng Wang,Chunming Liu

ICEMI20230294 **Wiener Process and Extreme Learning Machine Swarm Based Transfer Learning for Remaining Useful Life Prediction of Lithium Battery** *503*
Xiaowu Chen,Zhen Liu

ICEMI20230297 **Research on Interpretation and Monitoring Method of On-orbit Satellite Telemetry Data** *513*
Xiumei Liang,Chang Yu,Jie Wang,Ruzhi Zhou,Si Guo

Author Index *519*