

# **2023 International Symposium on Ultrafast Phenomena and Terahertz Waves (ISUPTW 2023)**

**Qingdao, China  
8 – 11 September 2023**



**IEEE Catalog Number: CFP23NZ8-POD  
ISBN: 979-8-3503-1748-0**

**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:	CFP23NZ8-POD
ISBN (Print-On-Demand):	979-8-3503-1748-0
ISBN (Online):	979-8-3503-1747-3

**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](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

## TABLE OF CONTENTS

Nonlinear Investigation for Pair-Breaking in Superconducting States Under Terahertz Radiation..... <i>Jie Tian, Hao Zhang, Dedong Tang</i>	1
The Simulation of Beam Arrival Time Jitter of THz Source Based on Superconducting Accelerators..... <i>Lanbin Li, Shuai Ma, Xiao Jin, Ming Li, Xinfan Yang, Kui Zhou, Weijun Wang</i>	2
Research on Optical Properties of Human Hepatoma Cells Using Terahertz Time-Domain Spectroscopy ..... <i>Hanxiao Guan, Weihang Qiu, Yehao Ma, Liangfei Tian, Yuqi Cao, Guangxin Zhang</i>	6
Backward THz Emission from Two-Color Laser Field-Induced Gas Plasma .....	10
<i>Yuxuan Chen, Yuhang He, Liyuan Liu, Zhen Tian, Jianming Dai, Xi-Cheng Zhang</i>	
Terahertz Broadband Absorption and Phonon Dispersion of Gallium Telluride .....	11
<i>Hong Li, Kai Zhang, Enen Li, Qibing Li, Hongbo Li, Tianwu Wang</i>	
AlGaN/GaN HEMT Sub-Terahertz Detectors Integrated with Spiral Antennas.....	18
<i>Zhen Huang, Chang Wu, Wei Yan, Yaru Kang, Rui Zhou, Tao Guo</i>	
Dual-Function Terahertz Ultra-Broadband Modulator Based on the Vanadium Dioxide and Gold .....	21
<i>Shiping Feng, Huiting Lan, Min Zhang, Shixing Wang, Ling Li, Huawei Liang, Hong Su</i>	
PXI-Based Measurement and Analysis of 230-330 GHz Terahertz Vertical Wall Reflection Channels .....	26
<i>Cuiling Zhang, Wenyi Zhang, Hongcheng Yang, Zhe Yang, Jingsuo He, Cunlin Zhang</i>	
Quasi-Bound States in the Continuum in Terahertz Trimer-Based Metamaterials .....	29
<i>Mingkun Zhang, Shan Yin, Wei Huang</i>	
A Method to Detect Gas Based on the Fabry-Pérot Cavity by Using Terahertz Frequency-Domain Spectroscopy .....	32
<i>Yubo Wu, Cunjun Ruan, Kanglong Chen</i>	
A 2.4 GHz Fully Integrated, 50-Ohm Matched Power Amplifier for Bluetooth Application.....	35
<i>Huang Pingyang, Yang Jilong, Cui Qiang, Cheng Zhiyuan</i>	
Enhancement Effect of Terahertz Wave Security Inspection Images by Combining Large Threshold Value Mean Filtering with Canny Algorithm .....	39
<i>Qiqi Li, Mingyang Mingyang, Yaoyao Xue, Jiusheng Li</i>	
Monitoring the Curing Process of Polyurethane Materials Based on Terahertz Technology .....	42
<i>Siyi Han, Qiang Zhang, Yuping Liu, Zhiyong Wei, Qi Guo, Cunlin Zhang, Zhenwei Zhang</i>	
Aberration Analysis in Diffraction Imaging of a Small Kepler-Type Double-Lens Optical System.....	46
<i>Guimei Wei, Xiongping Xia</i>	
Circuit Design of AC-Powered Glow Discharge Terahertz Wave Detector.....	50
<i>Zhaoyu Li, Lei Hou</i>	

## Author Index