

2022 Iranian International Conference on Microelectronics (IICM 2022)

**Tehran, Iran
20-22 December 2022**



**IEEE Catalog Number: CFP22BX3-POD
ISBN: 979-8-3503-2454-9**

**Copyright © 2022 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: | CFP22BX3-POD |
| ISBN (Print-On-Demand): | 979-8-3503-2454-9 |
| ISBN (Online): | 979-8-3503-2453-2 |

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 Content

01- “Study of linearity indices in analog/RF circuits using EKV model and comparing the results in three different CMOS processes”

Gholamreza Khademevatan - Ali Jalali..... 1

02- “A photo sensor with one-direction memristive behavior based on silicon-oxide”

Pejman Ghasemi - Mohammad javad Sharifi..... 8

03- “Implementing Real-Time Low-Power Audio Effect with FPGA”

Saman Moghanloo - Behzad Ebrahimi..... 13

04- “FinFET-based Low-Power Approximate Multiplier for Neural Network Hardware Accelerator”

Faraz Baraati - Milad Tanavardi Nasab - Reza Ghaderi - Kian Jafari..... 17

05- “A High Swing and Low Power Associative Memory Based on Emerging Technologies”

Mahan Rezaei - Arefe Amirany - Mohammad Hossein Moaiyaeri - Kian Jafari..... 21

06- “Design and fabrication of an optical sensor for glucose measurement in a microfluidic chip”

Roghayeh Fathpour - Adel Pourmand..... 26

07- “Optimization of Cavity Length for Broad Spectral Width Superluminescent Diodes”

Seyed Peyman Abbasi - Arash Hodaei..... 29



08- “Thermal Management of GaAs/AlGaAs VCSELs by Optimizing MHCG and DBR Hybrid Reflectors”

Hassan Hooshdar Rostami - Vahid Ahmadi - Saeed Pahlavan 34

09- “Design of a Tunable Impedance Matching Network Based on MEMS Cantilever Switches”

Fazel Ziraksaz - Alireza Hassanzadeh..... 39

10- “High-sensitivity biosensor based on junctionless transistor using Si/Si 0.5Ge0.5 hybrid heterostructure: A potential device for SARS-CoV-2 sensing”

Mohammad Fallahnejad - Maryam Shaveisi..... 43

11- “Critical Charge Dependency of Single Event Upset (SEU) on the Supply Voltage in Nanometric CMOS SRAMs”

Masume Soleimaninia - Gholamreza Raisali - Amir Moslehi 48

12- “A Core-offset inline-MZI Based Fiber Optic Sensor for Refractive Index Measurement”

Asma Malekpour - Meysam Saeedi - Vahid Ahmadi 53

13- “Performance Analysis of Mid-Wave Optical Receiver based on Barrier Upside-down nBn Photodetectors for Free Space Optical Wireless Communication Systems”

Maryam Shaveisi - Peiman Aliparast 57

14- “Linearity Improvement of the CMOS Power Amplifier with Auxiliary Path”

Abbas Nasri - Sirous Toofan..... 62

15- “An Iterative Clipping and Filtering Algorithm for PAPR Reduction in OFDM System”



Abbas Nasri - Mostafa Katebi - Sirous Toofan - Mohammad Mostafavi 66

16- “High Performance MWIR InAsSb-based nBn Photodetectors”

Maryam Shaveisi - Peiman Aliparast 70

17- “Fabrication and characterization of two concentric whispering-gallery mode microring lasers”

Alireza Kavousi - Fatemeh Moradiani - Gholam Mohammad Parsanasab 74

18- “Zigzag antimonene nanoribbons for nanoscaled optical devices”

Ali Molajani barzoki - Arash Yazdanpanah Goharrizi 77

19- “A Histogram-Based Digital Background Calibration Technique for Pipelined A/D Converters”

Saeedeh Yahyae - Mohammad Yavari 80

20- “Variable precision, mixed fixed/floating point MAC unit for DNN accelerators”

Ali Talebi - Morteza Mousazadeh 85

21- “Skin Effect Analysis and Comparison for Carbon-Based Interconnects at 5nm Technology Node”

Soheila Gharavi Hamedani - Mohammad Hossein Moaiyeri 90

22- “Design and Implementation of a Low Power Time-to-Digital Converter for Pixel Application”

Mohammad hasan Pass- Sayed Masoud Sayedi - Seyed Amir Reza Ahmadi Mehr 94



23- “A Novel Fast Power-Efficient Cascode Level-Shifter”

Amirhossein Zanjani - Mohsen Jalali 98