

2024 IEEE International Microwave Filter Workshop (IMFW 2024)

**Cocoa Beach, Florida, USA
21 – 23 February 2024**



**IEEE Catalog Number: CFP24W61-POD
ISBN: 979-8-3503-4533-9**

**Copyright © 2024 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:	CFP24W61-POD
ISBN (Print-On-Demand):	979-8-3503-4533-9
ISBN (Online):	979-8-3503-4532-2

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 CONTENTS

A Novel Tunable Dual-Band Filter to Achieve a Wide Tuning Range Using One Tuning Element.....	1
<i>Seyyed Mojtaba Pourjaafari, Mohamed M. Fahmi, Raafat R. Mansour</i>	
Multi-Functional RF Filter with Co-Designed Low Noise Amplifier and RF Switching Capabilities.....	5
<i>Steven Matthew Cheng, Dimitra Psychogiou</i>	
Tunable Coaxial Resonator Filter Based on Posts with Rectangular Bars	9
<i>Fynn Kamrath, Patrick Boe, Kennet Braasch, Daniel Bruhn, Daniel Miek, Michael Höft</i>	
Multi-Octave, Reconfigurable Bandpass Filters.....	12
<i>Matthew Torpey, Andrew Botelho, Taylor Brown, Andras Resch, Sean McLoughlin, Feiyan Lin, Jonathan Egan</i>	
Novel Compact Tunable Filter Prototype Realized with Vanadium Dioxide	15
<i>Thomas G. Williamson, T. Robert Harris, George Che, Nima Ghalichechian</i>	
Miniaturized Fully Reconfigurable Bandpass Filter with Automated Varactor Biasing.....	18
<i>E.M. Messaoudi, José V.M. Sánchez de Rojas, Jorge D. Martínez, Vicente E. Boria</i>	
The Resonant Input: Pushing the Boundaries of Coaxial Comb-Line Evanescent Mode Filters	21
<i>Simone Bastioli, Richard V. Snyder</i>	
Ku-Band MUX Based on Ceramic-Loaded Barrel-Shaped for High-Power Satellite Applications.....	25
<i>Luca Pelliccia, Fabrizio Cacciamani, Paolo Vallerotonda, Cristiano Tomassoni, Omid Bouzekri</i>	
Broad Stopband, Wide Passband, Bandstop Filter Using the Spurious Bypass Method	28
<i>Richard V. Snyder, Simone Bastioli, Kevin Keck</i>	
Novel Negative Coupling Structure for Rectangular Waveguide Cavity Filters	31
<i>Mohammad Mehrabi Gohari, Oleksandr Glubokov, Joachim Oberhammer</i>	
Robust and Flexible Design for Effective Low-Pass Filters Exploiting a Passband Replica	35
<i>David Santiago, Miguel A. G. Laso, Txema Lopetegui, Ivan Arregui</i>	
Properties of Triplets with Complex Reflection Zeros	39
<i>Matteo Oldoni, Stefano Tamiazzo, Giuseppe Macchiarella</i>	
Transitioning from Analytical to Numerical Methods for Synthesizing Microwave Bandpass Filters	43
<i>Junyi Liu, Ke-Li Wu</i>	
Systematic Synthesis of Synchronous Four Port Filtering Couplers	47
<i>Mohamed M. Fahmi, Ali E. Atia, Raafat R. Mansour</i>	
Synthesis of All-Resonator Multiplexers.....	51
<i>Abolfazl Mostaani, Talal Skaik, Yi Wang</i>	
Exhaustive Synthesis of Microwave Filter Topologies Based on Total Degree Homotopy	54
<i>Yi Zeng, Ming Yu</i>	
Filtering Microstrip to Waveguide Launcher.....	58
<i>Steven Caicedo Mejillones, Stefano Moscato, Matteo Oldoni, Lorenzo Silvestri, Andrea Brasi, Maurizio Bozzi</i>	

RF Input-Quasi-Reflectionless Dispersive-Delay Structures Based on Complementary-Diplexer Circuits	61
<i>Maciej Jasinski, Adam Lamecki, Roberto Gomez-Garcia, Michal Mrozowski</i>	
RF Co-Designed High-Selectivity Bandpass Filter/Attenuator (BPFA) with Tunable Attenuation	65
<i>Adnan Nadeem, Symeon Nikolaou, Hammad Aziz Mirza, Zixiao Zhang, Dimitra Psychogiou, Photos Vryonides</i>	
Microstrip-To-Microstrip Vertical Transition with Quasi-Elliptic-Type Dual-Band Filtering Response.....	69
<i>Li Yang, Roberto Gomez-Garcia</i>	
Compact Reconfigurable Matching Network for Antenna Detuning Mitigation in Smart Surfaces	72
<i>Joryan Sennesael, Kamil Yavuz Kapusuz, Sam Lemey, Patrick Van Torre, Hendrik Rogier</i>	
BAW Filter Trends for 5G and Beyond	75
<i>Eloi Guerrero, Alfred Gimenez, Wolfgang Heeren, Mudar Al-Joumayly</i>	
A 5G N77 Filter Using Shear Bulk Mode Resonator with Crystalline X-Cut Lithium Niobate Films.....	78
<i>Florian Hartmann, Seniz E Kuçuk Eroglu, Edgar Navarro-Gessé, Carlos Collado, Jordi Mateu, Luis Guillermo Villanueva</i>	
Control of the Miniaturization Degree in BAW CRF Filters.....	81
<i>Edgar Navarro-Gesse, Jordi Mateu, Carlos Collado</i>	
18 GHz Microacoustic ScAlN Lamb Wave Resonators for Ku Band Applications	84
<i>Luca Colombo, Gabriel Giribaldi, Matteo Rinaldi</i>	
38.7 GHz Thin Film Lithium Niobate Acoustic Filter.....	87
<i>Omar Barrera, Sinwoo Cho, Jack Kramer, Vakhtang Chulukhadze, Joshua Campbell, Ruochen Lu</i>	
Matching Network Absorption in Ladder Electroacoustic Filters	91
<i>Edgar Navarro-Gessé, Jordi Mateu Mateu, Carlos Collado, Marta Gonzalez Rodriguez</i>	
Bandwidth-Reconfigurable Acoustic Wave Filter with a Large Tuning Range	95
<i>Matthew Ou, Arash Fouladi Azarnaminy, Raafat R. Mansour</i>	
Additive Manufacturing of Zirconia Dielectric Resonator Filters Produced by Direct Ink Writing of Particles with Bimodal Size Distribution	99
<i>Patrick Boe, Philipp Schadte, Rainer Adelung, Leonard Siebert, Michael Höft</i>	
3D Printed Alumina Filters for Q Band Space Telecommunication	102
<i>Nicolas Delhote, Olivier Tantot, Aurélien Périgaud, Pierre-Marie Geffroy, Serge Verdeyme, Hervé Lebond, Christophe Chaput</i>	
Monolithically-Integrated Coaxial Resonator-Based Bandstop Filters Enabled by SLA 3D Printing	105
<i>Kunchen Zhao, Photos Vryonides, Symeon Nikolaou, Dimitra Psychogiou</i>	
Monolithic FDM 3-D Printed Waveguide Filters	109
<i>Daniel Miek, Patrick Boe, Daniel Bruhn, Fynn Kamrath, Kennet Braasch, Michael Höft</i>	
3-D Printed Surface-Mounted Ceramic Filters: Temperature Drift Effect on Coupling Parameters	112
<i>Andrés Fontana, Aurélien Périgaud, Nicolas Delhote, Patrice Richard, David Carsenat, Guillaume Acikalin</i>	

New Hybrid Filter for Wideband and Better Attenuation Using BAW and IPD Technology	115
<i>Youna Jang, Seo Koo, Dongsu Kim, Minsoo Park, Jong-Min Yook, Dal Ahn</i>	
Optimizing Performance in Ladder-Type SAW Filter Using Modified IDT Configurations	118
<i>Matthew Ou, Arash Fouladi Azarnaminy, Raafat R. Mansour</i>	
Aspects of BAW Filter Harmonics Wafer Level Testing	122
<i>Susanne Kreuzer</i>	
Metal-Insulator-Metal Capacitor Integration in Bulk Acoustic Wave Filters	125
<i>Ali Hosseini-Fahraji, Michael Schaefer, Alfred Gimenez</i>	
Synthesis of the Acoustic Wave H-Ladder Filter Topology.....	128
<i>Lluís Acosta, Carlos Caballero, Eloi Guerrero, Jordi Verdú, Pedro de Paco</i>	
Cross-Coupling Simplification in Asymmetric Acoustic-Electromagnetic Filters	132
<i>Gokhan Ariturk, Yao Yu, Ernest T.T. Yen, Hjalti H. Sigmarsson</i>	
Management of Stored Energy in Acoustic Wave Ladder Filters to Improve Yield.....	136
<i>Santi Cano, Mario Faura, Eloi Guerrero, Gustavo Piris, Jordi Verdú, Pedro de Paco</i>	
Highly-Compact Dual-Band Bandpass Waveguide Filter Based on Cross-Shaped Frequency- Dependent Coupling	140
<i>Lubina Irum, Muhammad Y. Sandhu, Adam Lamecki, Roberto Gomez-Garciaand, Michal Mrozowski</i>	
Circuit Model Extraction of Coupled-Resonator Filters and Multiplexers Via Direct Use of S- Parameter AAA Fitting.....	143
<i>Tim Reeves, Janakinadh Yanamadala</i>	
Design Solutions for Problems in Filters and Structures Using Self-Locking Tuning Screws.....	147
<i>Itzhak Shapir</i>	
Staggered Filter Topology for Robust Fabrication of Air-Filled Substrate-Integrated-Waveguide Filters.....	151
<i>Samuel Rimbaut, Bram Hoflack, Thomas Vervust, Hendrik Rogier, Sam Lemey</i>	
Isolated Filtering System Based on the Emerging AFSIW Technology	154
<i>Maxime Le Gall, Anthony Ghiotto, Issam Marah</i>	
Multiplexer Equal Ripple Optimization	157
<i>Daniel G. Swanson</i>	
Advances on Multiplexer Synthesis: The Herringbone Topology	160
<i>Lluís Acosta, Silvia Van Den Bogaart, Eloi Guerrero, Jordi Verdu, Yazid Yusuf, Alfred Gimenez, Pedro de Paco</i>	
Consistent and Cost-Effective PCB-Based D-Band Air-Filled Substrate-Integrated-Waveguide Filters.....	164
<i>Laura Van Messen, Reinier Broucke, Hendrik Rogier, Siddhartha Sinha, Ilja Ocket, Heinrich Trischler, Erich Schlaffer, Daniel Schlick, Sam Lemey</i>	
Enhancing Numerical Stability in Multiport Network Synthesis with Modified DK Method	167
<i>Beizun Liu, Yimin Yang, Ming Yu</i>	
Reconfigurable TM-Mode Dielectric Bandpass Filter Using Liquid Metals.....	170
<i>Abdulrahman Widaa, Fynn Kamrath, Michael Höft</i>	

Magnetostatic Wave Notch Filters Frequency Tuned Via a Zero DC Power Magnetic Bias Circuit.....	173
<i>Xingyu Du, Shun Yao, Yixiao Ding, Zhehao Yu, Alexander J. Geers, Firooz Aflatouni, Mark G. Allen, Roy H. Olsson</i>	
Switch-Based Non-Reciprocal Filter for High-Power Applications.....	177
<i>Mohammad Abu Khater, Alden Fisher, Dimitrios Peroulis</i>	
On Modelling of Balanced Filters	180
<i>Oleksandr Glubokov, Oleksandr Zhivkov, Volodymyr Stepanenko, Mykhailo Ilchenko, Joachim Oberhammer</i>	
Development of Waveguide Filters Through Lithography Metal Manufacturing Technology.....	184
<i>Oscar A. Peverini, Kay Reuter, Mauro Lumia, Giuseppe Addamo, Oilid Bouzekri</i>	
Progress on Metal Additive Manufactured Waveguide Filters: From L-Band to Q/V-Band	187
<i>Esteban Menargues, Stefano Sirci, María García-Vigueras</i>	
Coupled Resonator Bandpass Filters with Doubly Coupled Input/Output	191
<i>Junyi Liu, Ke-Li Wu</i>	
Dual-Band Lowpass-Bandpass Filter with Three Element Resonator Configuration	194
<i>Yingjie Di, Guiwen Luo, Chunbo Guo, Xiyuan Wang</i>	
Synthesizability of Filtenna Arrays with Uniform Quality Factor.....	198
<i>Matteo Oldoni, Gian Guido Gentili, Fabien Seyfert, Giuseppe Macchiarella, Cristina D'Asta</i>	
Synthesizing Input-Reflectionless Filters with Transmission Zeros: First Cauer, Then Foster	202
<i>Jongheun Lee, Juseop Lee, Seunggoo Nam, Sehwan Choi</i>	
Direct Band-Pass Synthesis of Wideband Reactive Filter Based on Matrix Rotations	205
<i>Mario Faura, Santi Cano, Lluís Acosta, Carlos Caballero, Jordi Verdú, Pedro de Paco</i>	
Direct Bandpass Synthesis of Wideband Lumped-Elements Filters Using Inductive Couplings.....	209
<i>Carlos Caballero, Lluís Acosta, Eloi Guerrero, Jordi Verdú, Pedro de Paco</i>	

Author Index