



IMFW 2021

International Microwave
Filter Workshop

November 17-19, 2021 Perugia Italy



- TECHNICAL PROGRAM BOOKLET -



Welcome message from the Conference General Chairs

On behalf of the Organizing Committee of the IEEE MTT-S International Microwave Filter Workshop (IMFW2021), it is our great pleasure to welcome you! You are attending a very special event. This is the first time that an international workshop has been fully devoted to both the academic and industrial aspects of filter technology. We call this "Fun With Filters."

The intention is to encourage attendance and active participation from industry, as the organizers feel that filter sessions at major conferences already offer ample opportunity for academia to provide cutting-edge research, but much important development performed in industry is not presented during conventional filter sessions. Both academia and industry will benefit from the new ideas, expertise, and techniques expected to be shared during this gathering.

The difficulties to travel due to of Covid-19 pandemic suggested us to organize a hybrid event with in-person and from remote attendance. This choice is because we really think it is important to meet colleagues in-person, but at the same time we would like to guarantee the participation to this brand-new event to all people around the world.

This workshop is financially sponsored by the MTT-S and technically cosponsored by the EuMA. After this initial event in Perugia, the workshop will be held in other parts of the world. The event represents a unique and unprecedented opportunity to bring together scientists around the world from industry and academia who specialize in filters to share the most recent advances in filter theory, technology, and manufacturing issues.

IMFW 2021 will be held in Perugia's wonderful old town. Perugia is a medieval historic and artistic city. Its University is one of the ancient in the world, dating back to the year 1308. Perugia is the capital city of Umbria in central Italy. Umbria, called the "green heart of Italy", borders the famous Tuscany region, with which it shares wonderful landscapes of gently rolling hills and green mountains.

We, the general chair and co-chair along with our participating group of organizers, wish you to enjoy IMFW2021. For in-person attendance we wish a great time in Perugia also for the additional time you may like to spend in the city or visiting the historical treasures and naturalistic beauties of Italy.

Don't miss IMFW 2021 You won't get a second chance to attend this inaugural event.

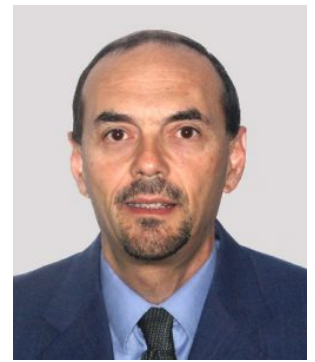
IMFW 2021 General Chair and Co-Chair
Cristiano Tomassoni and Richard V. Snyder



General Chair
Cristiano Tomassoni



General Co-Chair
Richard V. Snyder



Technical Program Chair
Giuseppe Macchiarella

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Yi Wang
Ke Wu
Ke-Li Wu
Ming Yu



- In the Memory of
Prof. Roberto Sorrentino -

Opening and Closing Sessions with Keynotes

WEDNESDAY, NOV. 17 2021

(10:30 - 12:30 CET)

- OPENING SESSION -

Welcome Messages

Keynote I (11:00 CET)

**Filter Design for Modern
(Communication and Other)
Systems-2021 Update!**

Speaker: Richard V. Snyder
President and founder of RS Microwave (Butler, NJ,
USA), Life Fellow IEEE, MTT-S President for 2011



Abstract:

With usable RF spectrum as one of the most expensive and usually unavailable natural resources, frequency subdivision techniques are critically important for protection of both the content producer and the consumer. The use of filters to provide walls to ensure isolation of users from one another is common, but the design of such filters is difficult because of user proximity, both spectral and physical. With spectrum more costly than hardware, the ordered metrics for filters have been performance, size, reliability, and lastly, selling cost. However, the current proliferation of new wireless technology and IoT potentially impacts the importance of each metric. As well, the migration of data transmission to ever-higher frequencies, i.e., up to and including the THz region, has a major impact on manufacturing technology. In this talk we will discuss topology and manufacturing technology for the most recent approaches to implementation of such filters.

Biography:

President of RS Microwave author of 145 papers, 3 book chapters and holds 27 patents. Interests: E-M simulation, network synthesis, dielectric and suspended resonators, high power notch and bandpass filters and active filters. BS, MS and PhD degrees from Loyola-Marymount, USC and Polytechnic Institute of New York University. Served the IEEE North Jersey Section as Chairman, 14 year Chair of the MTT-AP chapter, IEEE North Jersey EDS and CAS chapters for 10 years. He twice received the Region 1 award, January 1997: named a Fellow of the IEEE, now a Life Fellow. January 2000: received the IEEE Millennium Medal. General Chairman for IMS2003, in Philadelphia, Emeritus Chair for IMS2018 also in Philadelphia. Elected to the MTT-S ADCOM in 2004. Within the ADCOM, Chair of the TCC and Liaison to the EuMA. MTT-S Distinguished Lecturer: from 2007-2010, continuing in the Speakers Bureau. Three years as Associate Editor for the T-MTT, responsible for the filter papers submitted. Member: American Physical Society, the AAAS and the New York Academy of Science. MTT-S President for 2011. IMSEC Chair 2016-2019, N&A Chair at present. Reviewer for IEEE-MTT and EMC publications. Reviewer for the EuMA IJMW. Advises at the New Jersey Institute of Technology. Visiting Professor at the University of Leeds, in the U.K. Serves on TPC committees, as reviewer and/or Chair, for IMS, EUMW and other global conferences. 7 years as Chair of MTT-8 (now MTT-5 on Filters), continues in MTT-5/TPC work. Organizer of the annual IWS conference in China.

Keynote II (11:45 CET)

**Millimeter-Wave and Sub-TeraHz
Technology and Research Trends
on Filters: An Industry View**

Speaker: Renato Lombardi
Huawei Fellow, Chairman of ETSI ISG mWT
(millimeter-Wave Transmission), VP Microwave
Product Line, Head of Italy Research Center



Abstract:

High interest in millimeter-wave and sub-TeraHz bands has been rising in the recent years due to the enormous amount of under-utilized bandwidth that lies in this part of the electromagnetic spectrum. Technical advantages and large channel bandwidths make (sub) millimeter-wave suitable for the very high data rates required by enhanced Mobile BroadBand as well as for the new applications and services. In 5G mm-Wave front-ends, the use of filters is necessary to attenuate out-of-band signals such as a wideband noise, signal harmonics and unwanted harmonics: to suppress the unwanted interference signals, the antenna and the filter are usually designed individually and then cascaded by an extra transmission line. In addition to important technology directions like Substrate Integrated Waveguide (SIW) and the use of dual and multi-mode structures other important technical research trends are analyzed: mm-wave front-ends end-to-end cross layer design for architectures with an increasingly high level of integration and complexity and compact and low cost tunable structures.

Biography:

Renato Lombardi is Head of Huawei Italy Research Center, Vice President of Huawei's Microwave Product Line. In these roles, he oversees the research and development of microwave/millimeter-wave technologies for wireless communications and the implementation of innovative mobile broadband backhauling solutions all over the world. Renato Lombardi joined Huawei in 2008, founding the Huawei Research Center in Milan, Italy. In 2011, he was awarded the title of "Fellow of Huawei". Renato has more than 30 years of experience in the microwave and millimeter-wave industry. He previously led the Siemens Microwave Business and Product Management and then appointed Head of Research and Development. In 2015 Renato Lombardi has been elected Chairman of the ETSI Industry Study Group mWT (millimeter-Wave Transmission). Renato Lombardi graduated from the Politecnico di Milano, the largest and most prestigious technical University in Italy with a Master's Degree in Electronic Engineering.

FRIDAY, NOV. 19 2021

(10:30 - 12:00 CET)

- CLOSING SESSION -

Salutation Messages

Keynote III (10:50 CET)

**Substrate Integrated Waveguide
Multiband Bandpass Filters and
Multiplexers**

Speaker: Ke Wu
Professor of Electrical Engineering and Industrial
Research Chair in Future Wireless Technologies



Abstract:

Multiband bandpass filters (BPFs) and multiplexers are indispensable in emerging wireless communication and sensing systems characterized by various key performance indexes (KPIs) in connection with design metrics such as cost-effectiveness, performance reliability, dimensional compactness, integration density, and power handling capability. Generally, they are developed for either the realization of filtering and isolating functions in transceivers or the implementation of multi-function and multi-standard systems. As a well-established MHz-through-THz technology, the substrate integrated waveguide (SIW) has provided an attractive and effective solution for the development of cost-effective, self-packaged, and high-quality multiband BPFs and multiplexers benefitting from its inherent merits of low-cost, low-loss, high-density integration, and high-power handling capability. In this talk, technical approaches, design methodologies, implementation techniques, and practical demonstrations of SIW multiband BPFs and multiplexers are reviewed and discussed in terms of design features and application requirements, including a variety of state-of-the-art schemes of implementation including shunting, multimode resonator, multimode-shunting hybrid, and splitting types. Development roadmap and prospective applications are also briefly described.

Biography:

Dr. Ke Wu is Endowed Industrial Research Chair in Future Wireless Technologies and Professor of Electrical Engineering at Ecole Polytechnique (University of Montreal), where he is the Director of the Poly-Grames Research Center. He was the Canada Research Chair in RF and millimeter-wave engineering and the Founding Director of the Center for Radiofrequency Electronics Research of Quebec. He has authored/co-authored over 1400 refereed papers, and a number of books and book chapters and filed more than 50 patents. Dr. Wu was the general chair of the 2012 IEEE MTT-S International Microwave Symposium. He was the 2016 President of the IEEE Microwave Theory and Techniques Society (MTT-S). He also served as the inaugural North-American representative in the General Assembly of the European Microwave Association. He was the recipient of many awards and prizes including the 2019 IEEE MTT-S Microwave Prize and 2021 EIC Julian C. Smith Medal. He was an IEEE MTT-S Distinguished Microwave Lecturer. Dr. Ke Wu is a Fellow of the IEEE, Canadian Academy of Engineering and Royal Society of Canada.

Session: WE1A

Waveguide Filters & Multiplexers Design

- *Special Session organized by Vicente Boria and Marco Guglielmi* -

Chair: Vicente Boria
Co-Chair: Marco Guglielmi

Time: 8:30-10:30 CET

Session: WE1B

Recent Advances in Planar Filter Design Techniques

- *Special Session organized by Miguel Sánchez-Soriano and Roberto Gómez-García* -

Chair: Miguel Sánchez-Soriano
Co-Chair: Roberto Gómez-García

Time: 8:30-10:30 CET

Session: WE2A

Special Design Solutions for Filters and Combiners

- *Special Session organized by Ke-Li Wu and Ming Yu* -

Chair: Stefano Tamiazzo
Co-Chair: Antonio Morini

Time: 14:30-16:30 CET

Session: WE2B

Substrate Integrated Waveguides (SIW) Filters

- *Special Session organized by Anthony Ghiotto, Maurizio Bozzi and Ke Wu* -

Chair: Anthony Ghiotto
Co-Chair: Maurizio Bozzi

Time: 14:30-16:30 CET

8:30 T-Shaped Dual-Mode Waveguide Filters with Low Manufacturing Complexity for mm-Wave Applications

Daniel Miek, Fynn Kamrath, Patrick Boe and Michael Höft

8:30 Multilayered Balanced Wideband Bandpass Filter with High Filtering Selectivity

Li Yang and Roberto Gómez-García

14:30 Exhaustive Synthesis and Realization of Extended-Box Topologies With Dispersive Couplings

Yan Zhang, Fabien Seyfert and Ke-Li Wu

14:30 Compact Filtering Antennas Based on Dual-mode SIW Cavity

Shuosheng Ji, Yuandan Dong and Yong Fan

8:50 Frequency Adjustable Narrow- and Moderate Bandwidth Filters with Wide Tuning Range

Efstathios Doumanis and George Goussetis

8:50 Theoretical Design of Transmission-Line Reflectionless Bandstop Filter

Sanggu Lee, Jongheun Lee and Juseop Lee

14:50 Design Advanced Microwave Filters with Redundancy

Yi Zeng and Ming Yu

14:50 An SIW-fed Wideband Filtenna for 5G Millimeter-Wave Communications

Hao-Tao Hu and Chi Hou Chan

9:10 Quasi-Reflection-Less Bandpass Filter with a Variable Frequency Plan

Joe E Zeidan, Stéphane Bila, Abdallah Nasser and Aurelien Perigaud

9:10 Synthesis and Design of a Compact Electrically-Coupled Combine Filter with Multi-Sections Resonator

Loic Thepaut, Cedric Quendo, Benjamin Potelon, Françoise Mahé and Rémi Segalen

15:10 Tunable Diplexer Based on a Compact Hybrid-Coupled Filter Module (HCFM)

Mohammad Dawodi, Ying Wang and Ming Yu

15:10 Substrate-Integrated-Waveguide Diplexer Filter for SATCOM-on-the-Move

Kamil Yavuz Kapusuz, Giani Ollivier, Jules Noppe, Jaron Van Maele, Sam Lemey and Hendrik Rogier

9:30 Tx/Rx Diplexer for High-Power Space Applications Based on TM010 Mode Dielectric Resonators

Paolo Vallerotonda, Fabrizio Cacciamani, Luca Pelliccia, Walter Steffè, Jaione Galdeano, Petronilo Martin-Iglesias, Cristiano Tomassoni and Francesco Vitulli

9:30 Resistorless Implementation of Lossy Filters Using Coaxial SIW Resonators with Non-Uniform Q

Sandra Marin, Jorge D. Martínez and Vicente Boria

15:30 Filter Model Extraction with Convolutional Neural Network Based on Magnitude Information

Junyi Liu and Ke-Li Wu

15:30 Compact G-CPW Fed Air-Filled SIW (AFSIW) Filters for Systems on Substrate

Tifenn Martin, Anthony Ghiotto and Frédéric Lotz

9:50 Evanescent Mode Filters Composed of Dielectric Parts Built Using 3D-Printing Methods

Alejandro Pons Abenza, Jose Maria Garcia Barcelo, Fernando D. Quesada Pereira, Alejandro Alvarez-Melcon, Antonio Romera Perez, Juan Hinojosa, Marco Guglielmi, Vicente Boria and Lara Arche Andradadas

9:50 Compact Cross-Coupled Bandpass Filter with Wide Stopband and Low Radiation Loss Using SIDGS

Yunbo Rao, Jie Zhou, Huizhen Qian and Xun Luo

15:50 Overview of Base Station Requirements for RF and Microwave Filters

Dan Liang

15:50 Design of Dual/Tri-Band Filtering Antenna Using Multi-Mode SIW Cavities

Kun-Zhi Hu, Yang Wang, Dajiang Li, Dong Yan and Ming-Chun Tang

COFFEE BREAK

Time: 10:10 CET

COFFEE BREAK

Time: 16:10 CET

WEDNESDAY, NOVEMBER 17 2021

Session: WE2C

Interactive I

Chair: Luca Perregrini
Co-Chair: Marco Guglielmi

Time: 14:30-16:00 CET

Session: WE3A

Filters and Mux for Space Systems

- Special Session organized by Miguel Laso -

Chair: Richard V. Snyder
Co-Chair: Matteo Oldoni

Time: 16:30-18:10 CET

Session: WE3B

Acoustic Filters

- Special Session organized by Jordi Mateu -

Chair: Jordi Mateu
Co-Chair: Roberto Gómez-García

Time: 16:30-18:10 CET

14:30 ALD Stripline Resonator and Bandpass Filters for VHF and UHF Bands

Boris Belyaev, Alexey Serzhantov, Yaroslav Balva, Rinat Galeev, Konstantin Lemberg and Andrey A. Leksikov

14:40 Dielectric TM Dual-Mode Filters with Y-Shape

Daniel Miek, Patrick Boe, Fynn Kamrath and Michael Höft

14:50 Dual-Band Filter Composed of Dielectric and Waveguide Resonators with In-Band Transmission Zeros

Patrick Boe, Daniel Miek, Fynn Kamrath and Michael Höft

15:00 Effects of Non-Identical Resonators on BAW Linearity

Susanne Kreuzer

15:10 A Planar Quad-band Band-Pass Filter Employing Dual-Mode Band-Stop Resonators

Yi Wu, Erwan Fourn and Philippe Besnier

15:20 Compact Dual-Band Bandpass Filter with Wide Stopband Using Hybrid Microstrip/DGS

Chenfeng Liu, Yunbo Rao, Jie Zhou and Xun Luo

15:30 Compact Filtering Power Divider with Distributed Combine Coupled-Resonators

Hossein Sarbandi Farahani, Behrooz Rezaee and Wolfgang Bosch

15:40 Multiphysic Simulation Approach for 5G Filter Design

Domeninco Loricchio, Alberto Di Maria, Samuel Lopez and Massimo Capodiferro

16:30 The Recent Development of TE011 Mode Resonator Filters and Multiplexers

Yimin Yang and Ming Yu

16:50 Wide Spurious-Free Waveguide Assembly For Military SATCOM Applications

Simone Bastioli, Richard V. Snyder and Roberto Sorrentino

17:10 Ku-Band Differential Lossy Filter Manufactured in Thin-Film on Alumina Technology

Davide Tiradossi, Francesco Aquino, Luca Pelliccia, François Deborgies, Francesco Vitulli, Sergio di Nardo and Aurora De Padova

17:30 A Novel Realization of Fully Canonical and Pseudo-Elliptic Wideband Waveguide Filters

Muhammad Latif, Giuseppe Macchiarella, Farooq Mukhtar and Fahim G. Awan

17:50 Recent Advancements and Trends in Filters and Multiplexers for Space Application

Tobias Kässer

16:30 On the Influence of Input Phase on the Allocation of Transmission Zeros in Acoustic Ladder Filters

Eloi Guerrero, Jordi Verdu and Pedro de Paco

16:50 Synthesis of 2-CRF Section Filter without External Elements

Rafael Perea-Robles, Jordi Mateu, Carlos Collado, Kalyan K. Karnati, Alfred Gimenez and Yazid Yusuf

17:10 5G C-V2X Filter Using BAW Technology

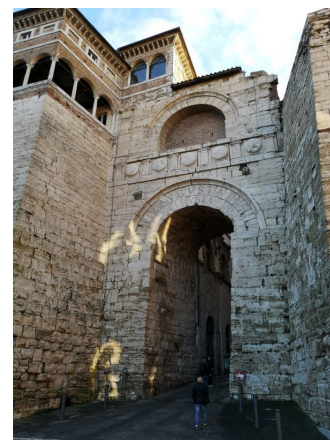
Kalyan K. Karnati

17:30 Towards a N77 Electroacoustic Filter Using Thin Films of Crystalline Y-Cut Lithium Niobate

Soumya Yandrapalli, Seniz E. Kucuk Eroglu, Jordi Mateu, Carlos Collado, Victor Plessky and Luis Guillermo Villanueva

17:50 Transversal Filters Based on Stacked Crystal Filters with Spurious Mode Suppression

Yazid Yusuf, Alfred Gimenez, Mudar AlJoumayly, Jordi Mateu and Carlos Collado



DISCUSSION/ COFFEE BREAK

Time: 15:50 CET

Session: TH1A

Filters and Mux for High-Power Applications

- *Special Session organized by Miguel Laso -*

Chair: Simone Bastioli
Co-Chair: Enrico Massoni

Time: 8:30-10:30 CET

Session: TH1B

Recent Techniques for Filter Synthesis and EM Design

- *Special Session organized by Michal Mrozowski and Adam Lamecki -*

Chair: Michal Mrozowski
Co-Chair: Adam Lamecki

Time: 8:30-10:30 CET

Session: TH2A

In Memory of Prof. Roberto Sorrentino

- *Special Session organized by Luca Pelliccia -*

Chair: Luca Pelliccia
Co-Chair: Simone Bastioli

Time: 10:30-12:10 CET

Session: TH2B

Multirole Microwave Devices with Integrated Filtering Functions

- *Special Session organized by Yi Wang and Xiu Yin Zhang -*

Chair: Roberto Gómez-García
Co-Chair: Matteo Oldoni

Time: 10:30-12:20 CET

8:30 High-Power X-Band Diplexer for Quad-Band X/Ka Antenna Feed Chain System

Fernando Teberio, Ibai Calero and Itziar Maestrujaún

8:30 Extended Path Filter Configurations

Stefano Tamiazzo, Giuseppe Macchiarella and Fabien Seyfert

10:30 Roberto Sorrentino, Transverse Resonance and so Much More

Marco Guglielmi

10:30 Model of Non-Reciprocal Bandpass Filter With Single-Band-Forward and Dual-Band-Backward Behavior

Roberto Gómez-García, José-María Muñoz-Ferreras, Li Yang and Dimitra Psychogiou

8:50 Recent Advances in Multiphysics Optimization for Microwave Filters Using Space Mapping Techniques

Wei Zhang, Feng Feng and Qijun Zhang

8:50 Advanced CEM Codes for Microwave Synthesis: Full-Wave Coupling Matrix in Electromagnetics

Valentin de la Rubia

10:50 Advances in Filters for Space Telecommunications

Andrea Suriani, Francesco Vitulli and Walter Steffè

10:50 Waveguide Filtering Antenna Array Using TM450 High-Order Mode Resonator

Jing-Yu Lin, Sai-Wai Wong and Yang Yang

9:10 Ceramic-Loaded Barrel-Shaped Ku-Band filter for High-Power Satellite Applications

Paolo Vallerotonda, Fabrizio Cacciamani, Luca Pelliccia, Francesco Aquino, Cristiano Tomassoni, Petronilo Martin-Iglesias and Vittorio Torielli di Crestvolant

9:10 Shape Optimization of a Compact Dual-Mode Filter Using Bézier Curves Parametrization

Ali Dia

11:10 Satellite Filters for 5G/6G and Beyond

Fabrizio De Paolis

11:10 Millimeter-Wave Dual-Polarized Filtering Antenna Design for 5G AiP Application

Sheng Jie Yang and Xiu Yin Zhang

9:30 Experimental Evaluation of Dielectric-filled SIW Filter Continuous Wave Power Handling

Anthony Ghiotto, Alexandre Marque, Maxime Le Gall and Frédéric Lotz

9:30 Extraction Techniques for Generic Cascaded Synthesis

Fabien Seyfert, Smain Amari, Yan Zhang and Ke-Li Wu

11:30 Triangular Combine Filters Conceived for Additive Manufacturing

Stefano Sirci, Esteban Menargues and Stephen Berry

11:30 A Slot Filtenna Based on Gap Waveguide Using Novel Sidewalls

Jiafeng Zhou, Bahaa Al-juboori and Yi Huang

9:50 RF Breakdown Analysis in Filters

Sergio Anza, Carlos Vicente, Jordi Gil and Teresa Pinheiro

9:50 Coupling-Matrix Filter Synthesis With Arbitrary Frequency-Variant Reactive Couplings

Martyna Mul, Adam Lamecki, Roberto Gómez-García and Michal Mrozowski

11:50 5G Continues to Drive RF Innovation

Erika Meniconi, Ben Thomas, Valeria Nocella, Donghang Lu, Andreas Link and Gernot Fattinger

11:50 Design of Filtering Rat-Race Coupler Based on Hemispherical Resonator

Gang Zhang, Yuan Chen, Mingyue Pan, Xiu Yin Zhang, Jiaxin Tian and Xueying Liao

COFFEE BREAK

Time: 10.10 CET



12:05 Silver-Plated Dielectric Waveguide Filters Using Dual-Ridge Dual-Mode Resonator

Ya Xie and Fu-Chang Chen

THURSDAY, NOVEMBER 18 2021

Session: TH3A

Novel Synthesis & Design Techniques

Chair: Richard V. Snyder
Co-Chair: Daniel G. Swanson, Jr.

Time: 14:00-16:00 CET

14:00 Some Observations on the Coupling Matrix

Daniel G. Swanson, Jr.

14:20 Filter synthesis as a Structured Inverse Generalized Eigenvalue Problem

Przemyslaw M. Bryndza

14:40 Design of Coupled-Resonator Filter with Arbitrary Group-Delay Response and Dispersive Coupling

Maciej Jasinski, Adam Lamecki, Michal Mrozowski, Martyna Mul and Roberto Gómez-García

15:00 Design Guidelines for Microwave Filters in Gap Waveguide Technology

Zahra Shaterian, Ali K. Horestani and Michal Mrozowski

15:20 A Design Method of Wideband BPF Considering Frequency Dependence of Inverters for SAW Filter

Youna Jang, Junho Kim, Jongsu Ha, Dongsu Kim, Jongsik Lim, Sang-Min Han and Dal Ahn

15:35 Inline Generalized Chebyshev Dielectric Waveguide Filters With Nonlinear Frequency-Variant Inverters

Muhammad Y Sandhu, Michal Mrozowski, Adam Lamecki and Roberto Gómez-García

COFFEE BREAK

Time: 15:50 CET

Session: TH3B

Microwave Filters for Highly Integrated Systems

- Special Session organized by Miguel Laso -

Chair: Maurizio Bozzi
Co-Chair: Simone Bastioli

Time: 14:00-16:00 CET

14:00 Design of a Compact, Highly-Integrated, Eight-Filter Module Using Multilayered-PCB

Juan Bohorquez, Benjamin Potelon, Cedric Quendo, Mathieu Cariou, Alexandre Manchec, Rémi Segalen, Florent Karpus and Stéphane Cadiou

14:20 Miniaturized Triple-Mode Bandpass Filter Using Dielectric Resonators

Nonchanutt Chudpooti, Nattapong Duangrit, Giorgos Savvides, Prayoot Akkaraekthalin, Ian Robertson and Nutapong Somjit

14:40 Millimeter-Wave CMOS Passive Filters for 5G Applications

Xi Zhu, Zeyu Ge, Li Yang and Roberto Gómez-García

15:00 Miniaturized Ultra-Wideband Bandpass Filter Based on Substrate Integrated Quasi-Lumped Resonators

El Mehdi Messaoudi, Jorge D. Martinez and Vicente Boria

15:20 A Novel 2-Pole Tunable Coplanar Filter Using Integrated Phase Change Material Switches

Pierre Blondy, Nicolas Le Gall and Ines Bettoumi

COFFEE BREAK

Time: 15:40 CET

Session: TH3C

Interactive II

Chair: Marco Guglielmi
Co-Chair: Stefano Tamiazzo

Time: 14:00-16:00 CET

14:00 Planar Balanced Filters with Ultrawide Band Common-Mode Suppression and Tunable Notch

Ali K. Horestani and Michal Mrozowski

14:10 Exploiting Input Phase in Extracted Pole Filters With a Single Nature for All Non-Resonant Nodes

Eloi Guerrero, Luis Acosta, Jordi Verdu and Pedro de Paco

14:20 Filtering Performance of Micro-Acoustic-Based Matching Networks for Wake-Up Applications

Luca Colombo, Giuseppe Michetti, Michele Pirro, Gabriel Giribaldi, Pietro Simeoni, Ankit Mittal, Ravikumar Pragada, Hussain Elkotby, Aatmesh Shrivastava and Matteo Rinaldi

14:30 Filter Architecture Operating Beyond the Q Limit and With Real-Time Bandwidth Tunability

Giuseppe Michetti, Ahmed Mekawy, Luca Colombo, Michele Pirro, Andrea Alù and Matteo Rinaldi

14:40 An Integrated Passive Device RF Front-End for Narrow-Band Internet-of-Things Modules

Enrico Massoni, Diane Desmarres, Hilal Ezzeddine, Francois Sittler, Sophie Cahu Thomas, Jorma Benoit-Gonin, Elena Tosetti, Alessandro Moscatelli, Nunzio Di Paola and Olivier Lemarchand

14:50 Planar and Low-Consumption Switchable Filter Banks with Tunable Passband and Stopband Responses

Davide Tiradossi, Alessandro Cazzorla, Luca Pelliccia, Marco Bartocci, Pietro Bia and Antonio Manna

15:00 A Miniature UWB Filter with In-Band Interference Cancellation

Yamuna Jayan and Raafat Mansour

15:10 Switched Piezoelectric SAW Resonator Using Vanadium Oxide

Arash Fouladi Azarnaminy, Aminat Oyiza Suleiman, Mohamed Chaker and Raafat Mansour

DISCUSSION/ COFFEE BREAK

Time: 15:20 CET

Session: TH4A

Additive Manufacturing for Filter Fabrication

- Special Session organized by Oscar Peverini, Giuseppe Addamo and Mauro Lumia -

Chair: Giuseppe Addamo
Co-Chair: Maurizio Bozzi

Time: 16:00-17:40 CET

16:00 Tunable Resonator Using a Piston-Like Plunger

Aurelien Perigaud, Nicolas Delhote, Serge Verdeyme, Ludovic Carpentier and Olivier Tantot

16:20 Effects of Cutting Planes on Filter Performance of FDM 3D-Printed X-Band Waveguide Filters

Daniel Bruhn, Daniel Miek, Kennet Braasch, Fynn Kamrath, Chad Bartlett, Patrick Boe and Michael Höft

16:40 Space-Qualified Additive Manufacturing and its Application to Active Antenna Harmonic Filters

Stefano Sirici, Esteban Menargues and Mathieu Billod

17:00 Very High Q-Factor Bandpass Filter Using Additive Manufacturing

Enrique López-Oliver, Cristiano Tomassoni, Giuseppe Addamo, Flaviana Calignano, Mauro Lumia, Oscar Peverini and Giuseppe Virone

17:20 3D Printed Microwave Components for Frequencies above 100 GHz

Talal Skaik, Yang Yu, Yi Wang, Peter Huggard, Peter Hunyor and Hui Wang



THURSDAY, NOVEMBER 18 2021

Session: TH4B

**Reconfigurable/Tunable
and Multi-Functional
Filtering Devices**

- *Special Session organized by
Roberto Gómez-García and
Dimitra Psychogiou -*

Chair: Roberto Gómez-García
Co-Chair: Enrico Massoni

Time: 16:00-17:40 CET

**16:00 Filtering In-Band Full-Duplex
Slot Antenna Based on TM120 and
TM210 Dual-Mode Resonators**

*Jing-Yu Lin, Sai-Wai Wong and Yang
Yang*

**16:20 Non-Reciprocal Bandpass
Filter with Tunable Center Frequency
and Constant Fractional Bandwidth**

*Minahil Shirazi, David
Chatzichristodoulou, Abdul Quddious,
Nosherwan Shoaib, Dimitra
Psychogiou, Symeon Nikolaou and
Photos Vryonides*

**16:40 Bandwidth-Reconfigurable
Liquid-Metal Tunable Bandpass Filter**

*Alexander H. Pham and Hjalti
Sigmarrsson*

**17:00 Reconfigurable Bandpass Fil-
ter with Extracted Pole and Coupling
Resonators**

*Fynn Kamrath, Chad Bartlett, Patrick
Boe, Daniel Miek and Michael Höft*

**17:20 Reconfigurable Bandpass
Filter Using SLCFET Technology**

*Matthew Torpey, Alan Robson and
Robert Howell*



FRIDAY, NOVEMBER 19 2021

Session: FR1A

Combiners and Filtennas

- *Special Session organized by Antonio Morini and Matteo Oldoni* -

Chair: Antonio Morini
Co-Chair: Matteo Oldoni

Time: 8:30-10:30 CET

Session: FR1B

Design and Dimensioning Techniques

Chair: Daniel G. Swanson, Jr.
Co-Chair: Luca Perregrini

Time: 8:30-10:30 CET

Session: FR2A

Innovative Technologies for Filters Fabrication

- *Special Session organized by Stephane Bila and Nicolas Delhote* -

Chair: Pierre Blondy
Co-Chair: Nicolas Delhote

Time: 14:00-15:48 CET

Session: FR2B

Marie Curie Projects Involved in Filters

- *Special Session organized by Michael Höft* -

Chair: Michael Höft
Co-Chair: Reinhard Teschl

Time: 14:00-15:48 CET

8:30 Explicit Formulas of the SM of a Symmetrical Combiner in Terms of the Ones of the Elementary Slices

Antonio Morini, Giandomenico Amendola, Davide Mencarelli, Lino Russo, Vittorio Tornielli di Crestvolant and Marco Farina

8:30 Compact One-Piece Coaxial In-Line Comb Filters and Duplexers with Transmission Zeros

Stefano Tamiazzo

14:00 Laser-Machined Ceramic Band-Pass Filters Development for mm-Wave Applications

Andres Fontana, Aurelien Perigaud, Nicolas Delhote, David Carsenat, Guillaume Acikalin, Patrice Richard and Stéphane Bila

14:00 Fully Inline and Symmetric Dual-Mode Dual-Band Bandpass Filters for Millimetre-Wave Applications

Chad Bartlett and Michael Höft

8:50 Ka-Band Coaxial Horn Filtenna for Enhanced Electromagnetic Compatibility on Spacecraft

Matteo Oldoni, Steven Caicedo, Stefano Moscato and Andrea Giannini

8:50 Equal Ripple Filter Optimization

Daniel G. Swanson, Jr.

14:20 A Reconfigurable Dual-Mode Filter in Embedded Suspended Stripline Substrate Technology (ESSS)

Ahmad Bader Alothman Alterkawi, Sebastian Sattler, Reinhard Teschl and Wolfgang Bosch

14:10 Additive Manufacturing of Non-Homogenous Dielectric Waveguide Structures and Filters

Luke Robins, Arash Arsanjani, Chad Bartlett, Reinhard Teschl, Wolfgang Bosch and Michael Höft

9:10 RF Transceiver with Antenna Design for Ultra-wideband Applications

Wen Cheng Lai

9:10 Design of Cavity Resonators Applying Shape Deformation Techniques

Michal Baranowski, Lukasz Balewski, Adam Lamecki and Michal Mrozowski

14:40 On-Silicon Efficient Integrated DRAs for Millimeter-Wave Energy Harvesting Solutions

Simone Trovarello, Diego Masotti and Alessandra Costanzo

14:20 X-Band 3D-Printed Metal-Insert Twist-Component for Bandpass Filter Applications

Chad Bartlett, Daniel Miek, Fynn Kamrath, Daniel Bruhn and Michael Höft

9:22 Passive Networks for C-Band Multi-Carrier Wireless Backhaul Systems

Giandomenico Cannone, Stefano Moscato and Matteo Oldoni

9:30 Dimensioning Criteria for TE201 Waveguide Singlet

Cristina D'Asta, Giuseppe Macchiarella and Gian Guido Gentili

15:00 An Ultra-Low Impedance 4.8 GHz Al72Sc28N Resonant Rods Resonator with a Record kt2 of 21.2%

Xuanyi Zhao, Onurcan Kaya, Michele Pirro, Giuseppe Michetti, Luca Colombo and Cristian Cassella

14:30 Additive Manufacturing of a 4th-Order K-Band Semi-Planar Slow-Wave Filter

Arash Arsanjani, Luke Robins, Benjamin Meier, Jelena Petrusa, Reinhard Teschl and Wolfgang Bosch

9:34 A Fault Tolerant Ka-Band Power Amplifier Based on Corporate Combining for Radar Applications

Giuseppe Venanzoni, Antonio Morini and Vincenzo Malaspina

9:50 A New Resonant Coupling Structure for Inline Waveguide Filters with Transmission Zeros

Cristiano Tomassoni and Giuseppe Macchiarella

15:12 The Wafer-Level Package Integration of a K/Ka band Diplexer-on-PCB

Zhibo Cao, Matteo Stocchi, Matthias Wietstruck and Mehmet Kaynak

14:40 A Novel Re-Entrant Cap Tuning Technique for TM-Mode Dielectric Resonators and Filters

Abdulrahman Widaa and Michael Höft

9:46 Combiners for Microwave Radio

Marco Gris



15:24 Investigation of a 3D-Printed Narrowband Filter with Non-Resonating Nodes

Abolfazl Mostaani, Lu Qian, Paul F Wilson, Moataz Attallah, Yi Wang, Mark A. Williams and Rafael Martinez

14:50 Self Cancellation of Higher Order Mode Spurious Frequencies in SIW Filters

Abdul Rehman, Cristiano Tomassoni, Lorenzo Silvestri, Nicolò Delmonte, Luca Perregrini and Maurizio Bozzi

9:58 Four-Port Multiband MIMO Filtenna with an Isolation Filter for Sub-6 GHz 5G Applications

Tanjir Alam and Michael Cheffena

15:36 mm-Wave Dual-Mode Grounded Microstrip Patch Bandpass Filter on 55-nm BiCMOS

Mohammed Wehbi, Philippe Ferrari and Cedric Durand

15:00 Microfluidic-Based Ultra-Wide Tuning Technique for TM010 Mode Dielectric Resonators and Filters

Abdulrahman Widaa and Michael Höft

COFFEE BREAK

Time: 10:10 CET

DISCUSSION

Time: 15:10 CET

- GALA DINNER & AWARD CEREMONY -

19:45 PM, Thursday 18th November, 2021

"Ristorante del Sole"

Via della Rupe, 1, 06121 Perugia PG, Italy

The Gala dinner is offered by our Golden sponsor Huawei.

The award ceremony will be celebrated during the Gala Dinner with the prizes named after Prof. Sorrentino to the memory of his legacy:

***"Sorrentino Best Paper Award &
 Sorrentino Best Student Paper Award"***



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