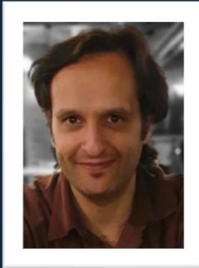


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ENABLING ADVANCED DIGITAL COMMUNICATIONS SYSTEMS WITH RF/MICROWAVE FILTERS WITH BEYOND-TRANSMISSION-BAND FLAT GROUP DELAY

IEEE Invited Talk



Enabling Advanced Digital Communications Systems With RF/Microwave Filters With Beyond-Transmission-Band Flat Group Delay

Date & Time: Wednesday, December 3, 2025, 10:30 AM

Location: University of Waterloo, EIT 3151

Speaker: Professor Roberto Gómez-García, University of Alcalá, Spain

Invited by: Professor Raafat Mansour.



Abstract

When designing RF/microwave filters, especial attention is commonly paid to the obtaining of high-selectivity filtering responses with sharp-rejection characteristics and high amplitude flatness within the transmission band. Nevertheless, this generally involves high in-bandgroup-delayvariations, which may be prohibitive in some applications, such as digital communication scenarios due to inter-symbol interference issues. The purpose of thistalk is to present recent advances in the development of RF/microwave filters featuring quasi-flatgroup-delayresponse well beyond their 3-dB transmission bands. These RF filters simultaneously exhibit transmission zeros in their out-of-band regions as a step further with regard to more-classic Bessel/Gaussian-type filter approaches. To start with, the motivation of the necessity of low-phase-distortion RF filters is introduced. Subsequently, different solutions for the design of constant-in-band-group-delayRF filters with transmission zeros, going from lowpass to bandpass applications with moderate-to-ultra-wideband characteristics, are revised. They exploit various classes of RF circuit structures, such as multi-transmission-line transversal circuit networks or complementary-diplexer schemes for reflectionless/absorptive implementations, as well as RF power couplers in transversal mode for reflective realizations. For all these families of RF filters with beyond-transmission-band flatgroupdelay, experimental results of manufactured proof-of-concept prototypes are shown.

Date & Time: Wednesday, December 3, 2025, at 10:30 AM

Location: University of Waterloo, EIT 3151

Speaker: Prof. Roberto Gómez-García, University of Alcalá, Spain.

Organizers

- IEEE KW AP-S Student Branch Chapter.
- IEEE KW MTT-S Student Branch Chapter.



**Enabling Advanced Digital Communications Systems With RF/Microwave Filters
With Beyond-Transmission-Band Flat Group Delay**

Prof. Roberto Gómez-García
University of Alcalá, SPAIN

Dec 3, 2025 | 10:30 am | EIT 3151

Abstract

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Biography

Roberto Gómez-García received the Dipl.-Eng. degree in telecommunication engineering and the Ph.D. degree in electrical and electronic engineering from the Polytechnic University of Madrid, Madrid, in 2001 and 2006, respectively. He is now a Full Professor with the Department University of Alcalá, Spain. His current research interests include the design of fixed/tunable high-frequency filters and multiplexers in planar, hybrid, and monolithic microwave-integrated circuit technologies, multifunction circuits and systems. He has authored/co-authored over 120 papers in international journals and 160 papers in international conferences. He was a recipient of the 2016 IEEE Microwave Theory and Techniques Society (MTT-S) Outstanding Young Engineer Award. Prof. Gómez-García served as a member for the Technical Review Board for several IEEE and European Microwave Association (EUMA). He served as an Associate Editor for IEEE MTT-S, IEEE CAS-S and many other Journals. He also served as the Editor-in-Chief of the IEEE Microwave and Wireless Components Letters. Prof. Gómez-García is an IEEE Fellow.

**WATERLOO
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Invited by Prof. R. Mansour

Date and Time

Date: **03 Dec 2025**

Time: **10:30 AM EST to 01:00 PM EST**



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Building: EIT-3151



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Co-sponsored by Professor Raafat Mansour

Registration

Starts **30 November 2025 12:00 AM EST**
Ends **03 December 2025 12:00 AM EST**
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Speakers

Roberto Gómez-García

Topic: **Enabling Advanced Digital Communications Systems
With RF/Microwave Filters With Beyond-Transmission-
Band Flat Group Delay**