



Delft University of Technology

## 2023 Spring/Summer ARFTG Microwave Measurement Conference [IMS2023]

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# 2023 Spring/Summer ARFTG Microwave Measurement Conference

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and Dennis Lewis*

The Automatic RF Techniques Group (ARFTG) is a technical organization interested in all aspects of RF, microwave, and millimeter-wave (mm-wave) measurement techniques and instrumentation. The group was originally created as a users' forum focused on the calibration and automation of early vector network analyzers. Since then, ARFTG has grown to encompass all aspects of microwave measurements from RF to terahertz.

ARFTG's core mission is education, achieved by the group by hosting

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conferences, workshops, and short courses covering a wide range of measurement topics as well as awarding fellowships and sponsorships to students. Additionally, ARFTG's close association with the top vendors of measurement instrumentation and components ensures high-quality exhibits at its conferences. The extended breaks from the conference technical sessions enable fruitful discussion and networking among colleagues, students, experts, and vendors.

ARFTG sponsors two conferences each year (Figure 1). The fall/winter conference has recently been colocated with Radio & Wireless Week (RWW), while the spring/summer conference is colocated with the International Microwave Symposium (IMS). The

2023 Spring/Summer Conference will be a single-day event on Friday, 16 June.

The theme of this 101st ARFTG Microwave Measurement Conference is "Challenges in Complex Measurement Environments." Conference topics will cover mm-wave over-the-air and multiple input/multiple output characterization, modulated waveform measurements, on-wafer techniques up to terahertz frequencies, and techniques for connector-less environments as well as many other subjects, including RF/digital mixed-signal measurement and calibration, nonlinear/large-signal measurement and modeling techniques, traceability in calibrations



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# The IMS2023 Exhibition

Carl Sheffres<sup>id</sup>

The IEEE International Microwave Symposium (IMS) features the largest exhibition in our industry, showcasing the world's leading suppliers of products and services. When you visit the exhibition, you will have the opportunity to see and experience the latest technologies and innovations available for all your design requirements. There will be live demonstrations, new product launches, and plenty of networking.

IMS2022, in Denver, CO, USA, was a great success, with 450 exhibiting companies in 726 booth spaces (Figure 1). IMS2023 has already exceeded the total number of 2022 booths as of this October writing, so we expect an even more robust and active show floor in San Diego, CA, USA. California is home to hundreds of RF/microwave companies, and San Diego is a perfect venue to host our annual event.

The exhibition will take place in halls D through H on the ground floor of the San Diego Convention



**Figure 1.** The industry exhibition at IMS2022. (Source: Chris Sheppard, Contentsource; used with permission.)

Center. The exhibition hours are 13 June, from 9 a.m. to 5 p.m.; 14 June, from 9 a.m. to 6 p.m.; and 15 June, from 9:30 a.m. to 3 p.m. Registration will be held in the lobby area of hall D, next to the entrance to the exhibition. A Starbucks is conveniently located near the entrance to boost your mornings, and coffee breaks

**“Sweet Treat Tuesday” has become a welcome staple of the exhibition on Tuesday afternoons, providing all attendees with an afternoon indulgence.**

will be provided on the show floor each morning and Tuesday and Wednesday afternoons. “Sweet Treat Tuesday” has become a welcome staple of the exhibition on Tuesday afternoons, providing all attendees with an afternoon indulgence.

The traditional “Industry Reception” will take place on Wednesday, from 5 to 6 p.m.,

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**Figure 2.** An industry presentation at IMS2022.

with a themed “beach party” vibe to help get you into the California groove. Food, beer, and wine will be

served in the aisles and from participating sponsors’ booths. Attendees can also visit the “game zone” to

compete with colleagues in an assortment of fun activities.

The MicroApps Theater is located on the exhibition floor and features more than 60 presentations from exhibiting industry experts (Figure 2). These sessions are 15 min each and take place through the duration of the exhibition. They are grouped by topic to make it convenient for attendees to work into their schedules.

There is no other international marketplace where you can meet face-to-face with thousands of RF and microwave decision makers. Nearly 90% of all IMS2022 attendees surveyed reported that the IMS exhibition is the number 1 reason for attending. This is the place to connect with the industry’s movers and shakers. Join us in San Diego for the coolest ideas under the sun.



## The 2023 RFIC Symposium *(continued from page 132)*

paper sessions and will offer panel sessions during the lunch breaks. Monday’s lunchtime panel, “How Soon Will We Become Cyborgs?” will be dedicated to the debate on the expected impact of the increased use of various technologies, such as augmented reality and smart hearing aids, on our everyday lives. Tuesday’s lunchtime panel, organized jointly with the 2023 International Microwave Symposium (IMS), will discuss the topic of “AI/ML-Based Wireless System Design and Operation—Hope or Hype?” This topic is interesting and controversial as the use of ML, or more broadly, AI, has already been demonstrated in a wide range of applications, including even music composition and artistic design. This lunchtime panel, with both industry and academia experts, will explore how we may harness AI in wireless system design and operation and

will attempt to distinguish hope from hype.

Last but not never the least, RFIC 2023 and Microwave Week will have many educational and professional development opportunities for students, all delivered at an exceptional value. Following its introduction in 2022, we will have a dedicated student session for RFIC 2023, where students can meet, interact, and learn about exciting technology trends and their potential future careers from industry experts. Furthermore, the RFIC Symposium will once again conduct a contest to select the top student papers from the symposium. The top student papers will also be featured at Sunday’s Symposium Showcase, providing an additional exposure opportunity. As part of IMS, students will have the opportunity to participate in design competitions and an RF Boot Camp. Last, the IEEE Microwave Theory and Technology

Society will offer a Ph.D. Student Sponsorship initiative for new students to become engaged with Microwave Week, providing learning, networking, and volunteer experiences along with complimentary registration and accommodations to qualified and selected students. Students will have the opportunity to purchase the Student Superpass, allowing them to experience every activity within Microwave Week, including a workshop, all three conferences (RFIC, IMS, and ARFTG), the Future Summit, a technical lecture, and much more, all at a deeply discounted price for IEEE Student Members.

On behalf of the RFIC Steering and Executive Committees, we welcome you all to join us at the 2023 RFIC Symposium in beautiful San Diego, CA, USA. Please visit the RFIC 2023 website (<http://rfic-ieee.org/>) for more details and updates.



# The MicroApps Seminars

*Joseph Staudinger<sup>ID</sup> and David W. Runton*

The MicroApps seminars (Figures 1 and 2) have been an integral part of IMS for many years and provide an unique venue for attendees to hear from industry experts on specific topics covering a wide gamut of technical topics. MicroApps presentations are given by “paying” exhibiting companies from the tradeshow floor, and speakers are encouraged to share industry-useful information, not company advertisements. The spirit of the presentations encourages early and new breaking information that may not be fully ready for the technical sessions. Over the past two decades, there have been great examples of early industry trends being first introduced in the MicroApps seminars. These include now-standard measurement tech-



**Figure 1.** Attendees at MicroApps presentations.

niques, design approaches, packaging, and even system-level integration considerations.

Each presentation is 15 min in duration and is given “live” to the audience. The IMS2023 MicroApps and Industry Workshops Committee will group and schedule the MicroApps seminars based on subject matter, allowing interested attendees to gather information on a specific topic from a variety of industry experts at one time. The

grouping also allows other exhibitors seeking industry partners and supply chains to quickly access all relevant companies and subject matter experts.

The MicroApps seminars are held at the MicroApps theater in the exhibit area to facilitate easy access (at no additional charge) for all of the attendees and exhibitor personnel. Companies presenting the MicroApps seminars are encouraged to invite attendees to participate. The MicroApps seminar

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**Figure 2.** MicroApps presentation stage in the heart of the exhibition.

presentation materials, i.e., PowerPoint files converted to PDF, will be available electronically through a cloud distribution service at the IMS website and the IMS Week mobile app.

IMS2023 MicroApps looks forward to continuing to build in both depth and breadth on the success of 2022, which featured 71 presentations delivered over three days. Topics ranged over the full gamut of RF and microwave disciplines, touching upon, for example, power amplifiers and linearization, materials characterization for 5G millimeter-waves, 5G emissions testing, RF filters for space, and designing waveguide filters, to name but a few.



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and measurement uncertainty, material properties characterization, and applications and advances in vector network analysis.

Oral technical sessions are presented in a single-track format. Extended breaks combine an exhibition and interactive forum, which provides networking opportunities with vendors and colleagues, whether researcher or practitioner. The conference is preceded by the Nonlinear Network Vector Analyzer Users' Forum and the On-Wafer Users' Forum, both held on Thursday, 15 June.

ARFTG also offers student sponsorship and fellowship programs. The sponsorship program gives financial aid to students presenting at an ARFTG conference, and the fellowship program provides financial assistance in support of research.



**Figure 1.** Jeff Jargon opening the 99th ARFTG in Denver, CO, USA.

If you have an interest in measurements from 1 kHz to 1 THz and beyond, be sure to add the 101st ARFTG Conference to your plans in San Diego this June. You will find

our atmosphere to be informal and friendly. For further details regarding the conference as well as the student sponsorship and fellowship programs, visit [www.arftg.org](http://www.arftg.org).

