

IMS 2023 Sails into San Diego

Regarded as the flagship event dedicated to the RF and microwave world, IMS 2023 returns to beautiful San Diego in June with a host of technical sessions, workshops, boot camps, and social events.

Every industry has its “biggest tradeshow and conference,” and for the RF/microwave community, the International Microwave Symposium (IMS) is *IT*. Each year, as they have since 1952, speakers, exhibitors, and attendees from around the world gather to exchange ideas and assess where the industry is and, more importantly, where it’s going. For the first time since 1994, IMS 2023 returns to San Diego for what’s known colloquially as Microwave Week, with the overall event spanning from Sunday, June 11 to Friday, June 16.

With an eye toward “the coolest ideas under the sun,” IMS 2023 will take over the San Diego Convention Center on the bayfront for the week. It will be co-located with the IEEE MTT-S Radio Frequency Integrated Circuits Symposium (RFIC) and the Automatic Radio Frequency Techniques Group (ARFTG).

Alongside the packed schedule of sessions, keynotes, and workshops, the exhibit hall (open Tuesday to Thursday) will feature [more than 500 exhibitors](#) eager to show off their newest wares. That’s up from 350+ exhibitors at IMS 2022 in Denver—providing further evidence that the industry is shaking off the pandemic blues.

IMS typically assigns itself a few themes each year, and this year’s no different. The first, Systems & Applications, encompasses the continuing development of RF, microwave, mmWave, and THz systems from semiconductor design through the device/module level and up to overall systems and applications. The second, Space, includes such topics as satellite communications, design for reliability, radiation hardness, CubeSats, and Internet of Space systems.



1. The Plenary and Closing Sessions will be addressed by Ed Godshalk (left) and Saura Naderi (right), respectively.



The third theme is Biomedical Applications, illustrating the use of RF and microwave technologies in the biomedical field.

Table 1: IMS 2023 at a Glance

These three themes will comprise what’s called the Systems Forum, with special focused technical paper sessions, panel discussions, invited speakers, and workshops. They’ll be bro-

ken out into daily technical themes:

- Tuesday: Wireless Communications, Future Directions (AI/ML), and the Connected Future Summit
- Wednesday: Model-Based Systems Engineering and Space
- Thursday: Wireless Power Transfer and Biomedical

A Systems Pavilion will display several practical examples of systems and applications at frequencies from RF through THz.

Highlights from the Technical Program

IMS 2023 will host an extremely broad, deep, and ambitious slate of technical presentations in various formats. At the outset, note that several events are intended for the future leaders of the RF/microwave industry, including [Student Design Competitions](#), the [University Booth Program](#), and the [Three-Minute Thesis Competition](#).

Another highlight is a [joint panel discussion](#) in the Young Professionals Lounge sponsored by Women in Microwaves and Young Professionals, at which female tech leaders and entrepreneurs will discuss the role of young pros in the industry (Thursday, 2 pm, Sails Pavilion).

Plenary and Closing Sessions

Monday’s [Plenary Session](#) (2:30, Ballroom 20), titled “The Role of the Transmission Line in Connecting People,” will be delivered by Ed Godshalk, PhD (*Fig. 1, left*), a consultant and Engineer in Residence at George Fox University with a long history of working at companies like Cascade Microtech, Maxim Integrated, and Tektronix. His presentation will cover the evolution of transmission-line technology from its role in the “Victorian internet” (telegraphy) to today’s transoceanic fiber lines, the common thread being the smashing of data-rate barriers.

In the [Closing Session](#) (Thursday, 3:30, Ballroom 20), Saura Naderi (*Fig. 1, right*) of the Halicioğlu Data Science Institute at UC San Diego will give a talk titled “Inspiring the Next Generation into STEM/STEAM.” She’ll discuss the value of encouraging young people into engineering careers and how her audience can help them succeed in STEM fields.

Workshops

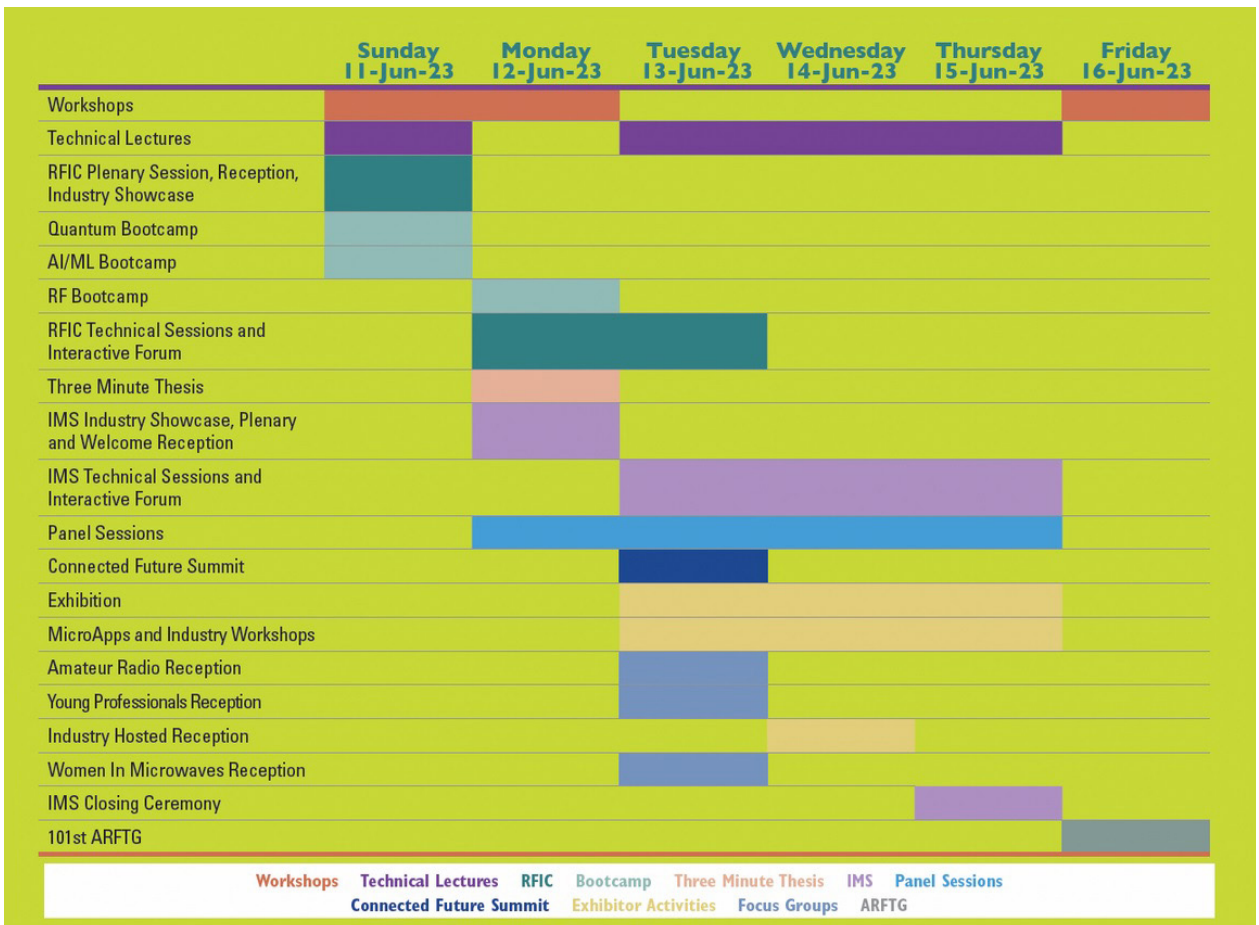
IMS 2023 is replete with a whopping 33 technical workshops conducted by experts from academia and industry,

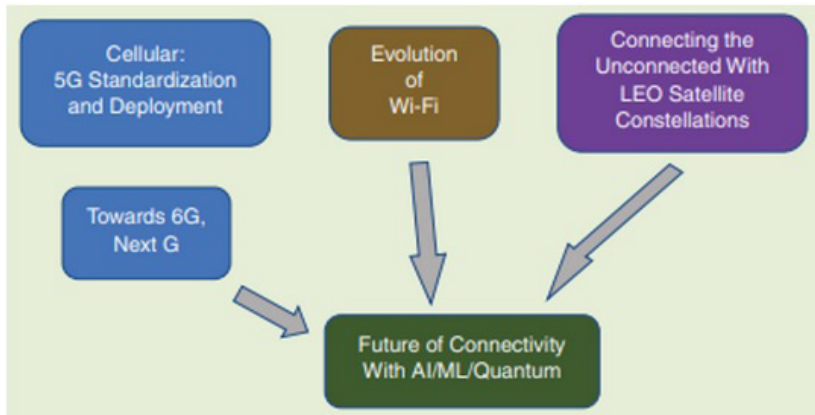
spread over three days of the event ([Sunday](#), [Monday](#), and [Friday](#)). Each of the three days will present a range of workshops on a myriad of topics.

For example, Sunday’s offerings range from the fundamentals of RF power amplifiers to 6G-related topics and high-data-rate interconnect technologies. Monday’s workshops span the likes of synthesis-based filter design; quantum circuits, methods, and algorithms; and transitioning from microwave to mmWave acoustic-wave devices. Friday’s schedule includes mmWave phased arrays and RF and mmWave biomedical radar technologies.

Connected Future Summit

Tuesday’s [Connected Future Summit](#) is the fruit of a collaboration between the IEEE MTT-S and COMSOC and will center on the theme of connected transportation. Future Next G (6G) networks will comprise a seamless integration of communication, computation, and artificial intelligence. This comes in the context of rapid evolution in the wireless connectivity landscape, melding Wi-Fi and broadband non-terrestrial networks (NTNs) based on low-Earth-orbit (LEO) satellite constellations.





2. Tuesday's Connected Future Summit will present a vision for connected transportation.

The Summit will outline how Next G technical specifications are being transposed into standards by 3GPP and the ITU's Radiocommunication Sector (*Fig. 2*). It will also delve into how these standards for Next G deployment will impact future directions of connectivity through next-generation Wi-Fi technologies and broadband satellite networks.

In his Connected Transportation Keynote, Qualcomm's James Misener will speak about how link and network connectivity and their underlying technologies will spur acceleration of transportation-system management and individual traveler movement to portend how we'll collectively get around in the future. The parallel development of various radio-access technologies and their deployment in both vehicles and infrastructure will transform our way of traveling.

Boot Camps Abound

IMS's Boot Camps are a great way to jumpstart your understanding of a dense thicket of technologies. Two Boot Camps will take place on Sunday this year: the [AI/ML Boot Camp](#) and the [Quantum Boot Camp](#). The former will get you going with artificial intelligence and machine learning for microwave applications. What is AI/ML? How are these technologies relevant in microwave-system design? What are their benefits and limitations? These questions, and many more, will be answered for attendees.

Likewise, the Quantum Boot Camp will explore the nascent connection between MTT-S and the quantum-computing industry. For quantum computing to succeed, the industry needs multidisciplinary engineers with a handle on both quantum physics and microwave engineering. This Boot Camp will present the basics of quantum engineering to microwave engineers who want to make their marks in this emerging field of study.

Monday's MTT-S [RF Boot Camp](#) will help you grow RF/microwave skills in an educational forum focused on the fundamentals of microwave theory and techniques. It's

meant for those who are new to the field as well as those wishing to stay current with new technologies, and it's worth two IEEE continuing education credits to attendees.

Technical Sessions

On its [Technical Sessions](#) homepage, IMS divides the sessions into six topics:

- [Field, Device, and Circuit Technology](#)
- [Passive Components](#)
- [Emerging Technical Areas](#)
- [Active Devices](#)
- [Systems & Applications](#)
- [Focus & Special Sessions](#)

On [Tuesday](#), [Wednesday](#), and [Thursday](#), the slate of technical sessions ranges through these broad topic areas, mixing and matching them each day in a panoply of subjects. For example, on Tuesday one can learn about advances in HBTs/HEMTs in RF applications, microwave and mmWave LNAs, and integrated passive devices.

Wednesday's lineup covers enabling technologies for sub-THz and THz systems, mmWave automotive radar systems, and emerging planar filters from L-band to mmWave. Sticking around through Thursday will avail you of sessions on wireless power transfer, advances in microwave acoustics, and biomedical radar-sensing techniques.

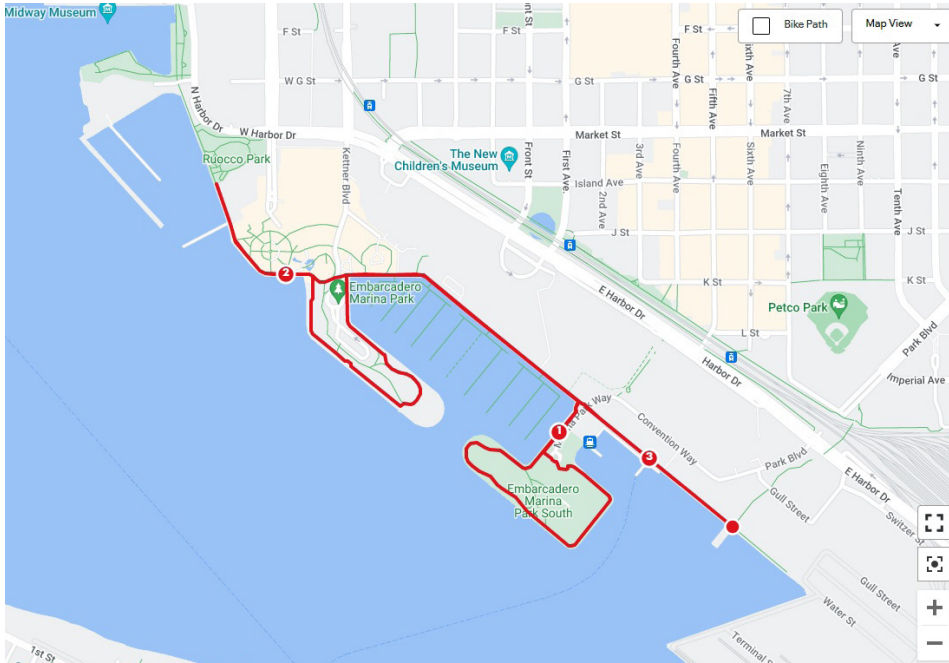
Social Events

Numerous [social events](#) are scheduled from Monday through Wednesday, starting with the IMS Welcome Event (Monday, 7 pm; Sails Pavilion) that immediately follows the Plenary Session with a Latin American Street Party theme. A Ham Radio social (Tuesday, 6 pm, Hilton Bayfront) for all radio amateurs and the ham-curious will sport a complementary buffet and drinks. That event overlaps with the Women in Microwaves reception (Tuesday, 6:30 pm, Hilton Bayfront), which spotlights the work of female RF engineers and researchers.

Wednesday evening's Industry-Hosted reception (5 pm, IMS show floor) promises a beach-party-themed event with appetizers, drinks, and networking on the menu. Finally, the MTT-S Awards Banquet (Wednesday, 6:30 pm, Hilton Bayfront) will honor industry luminaries and present entertainment.

San Diego at Large

If this is your first visit to San Diego, be aware that you're visiting a jewel of a city with [lots to see and do](#). The weather is great year-round, with June temperatures averaging be-



3. The inaugural IMS 5K Fun Run/Walk will take you on a tour of San Diego's Embarcadero.

tween 62 and 72°F, and little chance of precipitation. Thus, you won't have much excuse to skip the inaugural [IMS 5K Fun Run/Walk](#) (Wednesday, 6:30 am, Embarcadero) along the San Diego Bay (Fig. 3).

And for baseball fans, good news—the [San Diego Padres are in town](#) during Microwave Week. Their home, Petco Park, is located directly across Harbor Drive from the convention center. They'll be facing the Cleveland Guardians on Tuesday, Wednesday, and Thursday evenings. Be aware that it can get chilly at Petco on June evenings (ask me how I know).

Conclusion

In closing, there's a multitude of great reasons to make your way to San Diego for IMS and Microwave Week. You won't find a more relevant venue at which to learn about RF/microwave/mmWave technologies, techniques, and research. Formal and informal networking opportunities are plentiful, where you'll have access to technical experts, peers, and exhibiting vendors. And San Diego itself offers a great time to attendees. Looking forward to seeing you there!