# IEEE COMCAS 2023

**INTERNATIONAL CONFERENCE ON MICROWAVES, COMMUNICATIONS, ANTENNAS, BIOMEDICAL ENGINEERING & ELECTRONIC SYSTEMS**

6-8 NOVEMBER 2023

David Intercontinental Hotel
Tel Aviv, Israel

## Welcome to IEEE COMCAS 2023

On behalf of the IEEE COMCAS 2023 Steering Committee, it is our pleasure to launch the 9th International IEEE Conference on Microwaves, Communications, Antennas, Biomedical Engineering and Electronic Systems (IEEE COMCAS 2023). In 2023 the international IEEE COMCAS will continue to evolve and provide an advanced multidisciplinary forum for the exchange of ideas, research results, and industry experience in a range of key areas i.e., microwaves, communications and sensors, antennas, biomedical engineering, RF and microwave devices and circuits, thermal management and electronic packaging, signal processing and imaging, as well as radar, acoustics and microwave system engineering. In its entirety the event includes a technical program, industry exhibits, and guest presentations from global experts on recent academic and industry advancements.

In launching the 2023 event, we would also like to welcome you to the sunshine of the eastern Mediterranean, in Tel Aviv. As a cosmopolitan city of stunning views and endless innovation Tel Aviv is a center that resonates with an energized atmosphere, streets of storied history, and an internationally recognized nightlife. Taking place 6-8 November 2023 in Tel Aviv, Israel, at the David Intercontinental Hotel by the Mediterranean Sea; IEEE COMCAS will continue a biennial series tailored to maximize professional networking, support the candid exchange of ideas, and develop a range of enduring opportunities.

Our Technical Program is paired with a Technical Exhibition that offers companies and agencies a unique opportunity to visit Israel, present relevant products and quality services, and pursue key networking opportunities. Attendees can take part and engage with new contacts, create business opportunities and solidify contracts for the future.
IEEE COMCAS is recognized as one of the world's leading IEEE conferences and a specialty in its field. The event receives hundreds of manuscript submissions, draws together speakers from public, private, and academic practice, and presents the next frontier of industry potential.

Held before the COVID-19 pandemic, IEEE COMCAS 2019 was our greatest success to date with nearly 1900 attendees, over 240 guest lectures, in 88 sessions, alongside participants from 39 countries, and exhibitors from more than 100 industry vendors. Despite COVID-19 and its impact on events and travel, IEEE COMCAS 2021 was successful in attracting approximately 1200 attendees. Following 3 years of world transformation, we are confident that IEEE COMCAS 2023 will transcend our expectations on both a professional and personal level.

We invite you to join us in Tel Aviv 6-8 November 2023, and enjoy returning as a part of our active community at IEEE COMCAS.

**Shmuel Auster,**
*General Chair*
Chair, IEEE Israel
Chair, Israeli Society of
Electronics Engineers, AEAI

**Prof. Amir Boag,**
*Technical Program Chair*
Tel Aviv University, School of
Electrical Engineering

## LIST OF TOPICS

### Communications and Sensors

Beyond 5G – Systems & Technologies
AI, Machine Learning, Deep Learning in Communications and Sensors
Big Data in Communication Networks
MIMO & Space-Time Coding Technologies
5G systems & Millimeter Wave Propagation
Cognitive Radio & Spectral Sharing
Communications Security
First Responder/Military Communications
Green Communication
Internet of Things
Long Range Low Power Networks
Micro/Pico/Femtocell Devices and Systems
Modulation & Signal Processing Technologies
On-Body and Short Range Communications
Radio over Fiber & Optical/Wireless Convergence
Sensor Networks and Technologies
Software-Defined Radio & Multiple Access

### Antennas, Propagation, and Scattering

Antenna Theory and Design
Smart Antennas, Beamforming and MIMO
Wave Propagation and Channel Modeling
Wave Scattering and RCS
NanoEM, Plasmonics, and Applications
Metamaterials, FSS and EBG
EM Field Theory and Numerical Techniques
EM Interference & Compatibility, SI
Spectrum Management and Monitoring
ELF, RF, μWave, mmW and THz Measurements

### Electronic Packaging & Thermal Management (P&TM)

Chip, Package and PCB – Design, Advanced Materials and Technologies
Chip & Board Level Assembly
Advanced Packaging – 2.5D, 3D and Heterogenous Integration
3D Printing & Additive Manufacturing of Electronics
Electro Photonics Packaging
Adhesives, Molding & Encapsulation – Materials & Technologies
Soldering & Brazing for Electronic Packaging
Bio Medical Packaging
Plating & Coating – Materials & Technologies
Destructive and Non-destructive Testing
Thermal Management in Electronic Systems – Methods, Modeling and Solutions
Connectors, Cables & Routing
Inspection – Technologies & Methods
Reliability in Electronic Systems

### Biomedical Engineering

Big Data in Medicine
Artificial Intelligence, Machine Learning, Deep Learning
Biomedical Systems and Applications
Advances in Medical Imaging Technology
Medical RF, MW & MMW Applications and Devices
Medical Image Processing
Acousto-Optic Technologies
Novel Therapeutic Modalities
Effects of RF and MW on Biological Tissues

### RF/MW Devices and Circuits, RFICs

Solid-State Devices, RFICs
μWave, mmW and Sub-mmW Circuits/Technologies
Nano and THz Devices/Technologies
Microwave Photonics
Passive Components and Circuits
Filters and Multiplexers
Ferroelectrics, RF MEMS, MOEMS, and NEMS
Active Devices and Circuits
RF Power Amplifiers and Devices
Tunable and Reconfigurable Circuits/Systems
Analog/Digital/Mixed RF Circuits
Circuit Theory, Modeling and Applications
Interconnects, Packaging and MCM
CAD Techniques for Devices and Circuits
Emerging Technologies
Internet of Things Devices

### Microwave Systems, Radar, Acoustics

Aeronautical and Space Applications
RFID Devices/Systems/Applications
Automotive/Transportation Radar & Communications
Environmentally Sensitive (“Green”) Design
UWB and Multispectral Technologies & Systems
Emerging System Architectures
Modelling Techniques for RF Systems
Radar Techniques, Systems and Applications
Sonar Systems and Applications
Wireless Power Transfer & Energy Harvesting
Terahertz Systems
AI, Machine Learning, Deep Learning in Microwave, Radar, and Acoustic Systems

### Signal Processing (SP) and Imaging

Microwave Imaging and Tomography
Acoustic/Sonar Imaging and Techniques
Radar SP and Imaging, SAR, ATR
MIMO SP for Radar
Ground and Foliage Penetration Systems
Signal Acquisition and Sensor Management
DF, Emitter Location, Elint, Array Processing
Target Detection, Identification and Tracking
Data Fusion
Time Domain and UWB SP
AI, Machine Learning, Deep Learning in Signal and Image Processing

# KEYNOTE SPEAKERS

**Prof. Dana Z. Anderson**
University of Colorado
and Infleqtion, USA

**Jin Bains, CEO**
Mini-Circuits,
USA

**Prof. Goutam Chattopadhyay**
California Institute
of Technology,
USA

**Prof. Stefano Maci**
University of Siena, Italy

**Dr. Michael Peeters**
IMEC, Belgium

**Amit Sokolov**
VP R&D of INSIGHTEC,
Israel

# INVITED SPEAKERS

**Prof. Francesco Andriulli**
Politecnico di Torino, Italy

**Dr. Oscar Borries**
TICRA, Denmark

**Prof. Roberto D. Graglia**
Politecnico di Torino, Italy

**Prof. Yejun He**
Shenzhen University, China

**Prof. Vadim Issakov**
Technical University of Braunschweig, Germany

**Prof. Polina Kuzhir**
University of Eastern Finland

**Prof. Antonio Maffucci**
University of Cassino and Southern Lazio, Cassino, Italy

**Prof. Vladimir I. Okhmatovski**
University of Manitoba, Canada

**Dr. Felix Vega**
Technology Innovation Institute, Abu Dhabi, UAE

**Prof. Andrea Massa**
University of Trento, Italy

**Prof. Giacomo Oliveri**
Associate Professor, Department of Information Engineering and Computer Science
ELEDIA Research Center ELEDIA@UniTN, University of Trento, Italy

**Prof. Zoya Popovic**
University of Colorado, USA

# INVITED SPEAKERS

**Prof. Paolo Rocca**
University of Trento, Italy

**Dr. Andrej Rumiantsev**
MPI Corporation, Taiwan

**Prof. Mei Song Tong**
Department of Electronic Science and Technology Tongji University China

**Prof. Ludger Klinkenbusch**
Kiel University, Germany

**Prof. Shanker Balasubramaniam**
Ohio State University, USA

**Prof. Fedor Kusmartsev**
Khalifa University, Abu Dhabi, UAE

**Prof. Nikolaos Tsitsas**
Aristotle University of Thessaloniki, Greece

**Prof. Gabriele Gradoni**
University of Surrey, U.K.

**Prof. Olav Breinbjerg**
Independent Consultant, Denmark

**Prof. Claudio Curcio**
Università di Napoli Federico II, Italy

**Prof. Francesco D'Agostino**
University of Salerno, Italy

**Dr. Lars J. Foged**
Microwave Vision Group, Italy

# INVITED SPEAKERS

**Prof. Eric Michielssen**
University of Michigan, USA

**Prof. Ingmar Kallfass**
University of Stuttgart, Germany

**Prof. Corrado Carta**
IHP - Leibniz-Institut für innovative Mikroelektronik, Germany

**Prof. Viktor Krozer**
Goethe University, Germany

**Prof. Giuliano Manara**
University of Pisa, Italy

**Prof. Nemai Karmakar**
Monash University, Clayton, Australia

**Prof. Mário G. Silveirinha**
University of Lisbon, Portugal

**Prof. Oskars Ozolins**
Riga Technical University, Latvia

**Prof. Nadav Levanon**
Tel Aviv University, Israel

**Prof. Manos M. Tentzeris**
Georgia Tech, USA

**Dr. Sema Dumanli**
Boğaziçi University, Turkey

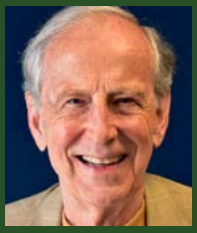
**Prof. Dimitrios Peroulis**
Purdue University, USA

# INVITED SPEAKERS

**Prof. Avraham (Avi) Gover**
Tel Aviv University, Israel

**Prof. Ari Sihvola**
Aalto University, Finland

**Prof. Nils Pohl**
Ruhr University Bochum, Germany



**Dr. Arthur Yaghjian**
Electromagnetics Research, USA

**Dr. Sebastien Chartier**
Fraunhofer IAF, Germany

**Prof. Carmit Hazay**
Bar-Ilan University, Israel

**Prof. Jay Guo**
University of Technology Sydney, Australia

**Prof. Emanuel Cohen**
Technion, Israel

**Dr. Grigorios P. Zouros**
National Technical University of Athens, Greece

**Dr. Evangelos Almpanis**
National Technical University of Athens, Greece

**Prof. Prabhakar H. Pathak**
Ohio State University, USA (retired)

**Prof. Wolfgang Bösch**
Graz University of Technology, Austria

# INVITED SPEAKERS

**Prof. Dr.-Ing. Friedel Gerfers**
Technical University of Berlin, Germany

**Prof. Guy Torfs**
University of Gent, Imec, Belgium

**Dr. Ariel Cohen**
Intel, Israel

**Dr. Nicolás Wainstein**
Intel and Technion, Israel

**Adee Ran**
Cisco Systems, Israel

**Dr. Leonid Yavits**
Bar Ilan University, Israel

**Dr. John Lau**
Unimicron Technology Corporation, USA

**Dotan Levi**
NVIDIA, Israel

**Prof. Kaushik Sengupta**
Princeton University, USA

## Monday, November 6, 2023

| Hall | Grand Ballroom |
|---|---|
| 09:20 | Plenary Session<br>**Teraherz Instruments to Unlock the Mystries of the Universe -** *Goutam Chattopadhyay (NASA-JPL/Caltech, USA)*<br>**Quantum Technology: Where Maxwell Meets Schrödinger -** *Dana Anderson (Infleqtion & University of Colorado, USA)* |
| 09:55 | Plenary Session<br>**Quantum Technology: Where Maxwell Meets Schrödinger -** *Dana Anderson (Infleqtion & University of Colorado, USA)* |
| 10:30 | Coffee Break and Visit the Exhibition |
| 11:00 | Plenary Opening Session<br>**Welcome Address** |
| 11:30 | Plenary Session<br>**Adventures into Communications and Sensing -** *Michael Peeters (IMEC & UA, Belgium)* |
| 12:05 | Plenary Session<br>**Technology Innovations Enabling the Rise of Commercial mmWave Markets -** *Jin Bains (Mini-Circuits, USA)* |
| 12:40 | Lunch and Visit the Exhibition |

| Hall | Royal H | Royal I | Grand A | Grand C | Room 4 | Room 5 | Grand B | Royal J | Room 3 |
|---|---|---|---|---|---|---|---|---|---|
| 14:00 | ET: Emerging technologies in Hardware | AMTA: AMTA Session: Antenna and RCS Measurements | EPS1: Interconnects | UWA1: Special Session: Underwater Acoustics 1 | SP1: Signal Processing & Imaging 1 | META1: Metamaterials 1 | IOT: IoTs Localization, Hardware Security and Trust: Threats, Countermeasures, and Design Tools | QCEM: Quantum Computational Electromagnetics | CT1: Wireless Apps 1 |
| 15:50 | Coffee Break and Visit the Exhibition | | | | | | | | |
| 16:10 | CS: Circuits and Systems | B5G: Special Session: Antenna and Propagation for 5G and Beyond | EPS2: Materials and Substrates | UWA2: Special Session: Underwater Acoustics 2 | SRS: Special Session: Image and Signal Processing for Aerial and Satellite Remote Sensing | META2: Metamaterials 2 | SDA: Panel: Security in the Blockchain Era: Challenges and a Look to the Future | HFM: Special Session: High-Frequency Methods in Electromagnetics | CT2: Wireless Apps 2 |

## Tuesday, November 7, 2023

| Hall | Royal H | Royal I | Grand A | Grand C | Room 4 | Room 5 | Grand B | Royal J | Room 3 |
|---|---|---|---|---|---|---|---|---|---|
| 09:00 | HPET: Special Session: High Power Electromagnetic Technologies | MBAT: Tutorial: Multibeam Antennas: architectures, trends and challenges | EPS3: Thermal Management | MSR1: Microwave Systems & Radar 1 | MC1: Military Communications 1 | CEM1: Special Session: Advanced Methods in Computational Electromagnetics 1 | CS1: Communications & Sensors | MWT: Special Session: Metamaterial Wave Theory | WIE: Women in Engineering |
| 10:50 | Coffee Break and Visit the Exhibition | | | | | | | | |
| 11:10 | HSW: High Speed Wireline Forum | AAS: Special Session: Current Trends and Advances in Antenna Array Synthesis | EPS4: Thermal Management & Printed Electronic | MSR2: Microwave Systems & Radars 2 | MC2: Military Communications 2 | CEM2: Special Session: Advanced Methods in Computational Electromagnetics 2 | CS2: Communications & Sensors 2 | NEM1: Special Session: Novel Electromagnetic Phenomena, facing Wireless Sensing Applications 1 | YP: Young Professionals |
| 13:00 | Lunch and Visit the Exhibition | | | | | | | | |
| 14:20 | | SEME: Special Session: Doing the Smart EM Environment - From the Smart Entities Design to the System Architecture Planning | EPS5: Reliability & Microelectronic Packaging | MSR3: Microwave Systems and Radars 3 | MC3: Military Communications 3 | MAS: State of the Art Computational Methods using Auxiliary Sources | FWC: Special Session: Future of Wireless Communications | NEM2: Special Session: Novel Electromagnetic Phenomena, facing Wireless Sensing Applications 2 | RFIC: RFIC and MMIC |
| 16:10 | Coffee Break and Visit the Exhibition | | | | | | | | |
| Hall | Royal H | | | | | | | | |
| 16:20 | IF: Interactive Forum | | | | | | | | |

## Wednesday, November 8, 2023

| Hall | Royal H | Royal I | Room 4 | Room 5 | Royal J | Room 3 |
|---|---|---|---|---|---|---|
| 09:00 | CDHI: Workshop: Chiplet Design and Heterogeneous Integration Packaging | NGW: Special Session: Advanced Technologies for Next Generation Wireless Communication Systems | APT: Active and Passive Techniques for Measurements and Communication | BMBA1: Special Session: Advances in Broadband and Multiband Antennas 1 | AP1: Antenna and Propagation 1 | QA1: Special Session: Quantum Antennas and Photonic Quantum Sensing 1 |
| **10:50** | **Coffee Break** | | | | | |
| 11:10 | WP: Workshop: Wireless Powering | PSA: Panel: Emerging Technologies for Public Safety Applications | BM1: Biomedical Engineering 1 | BMBA2: Special Session: Advances in Broadband and Multiband Antennas 2 | AP2: Antennas and Propagation 2 | QA2: Special Session: Quantum Antennas and Photonic Quantum Sensing 2 |
| **13:00** | **Lunch** | | | | | |
| 14:20 | TCC: Tutorials | CS3: Communication & Sensors 3 | BM2: Biomedical Engineering 2 | AP3: Antennas and Propagation 3 | SCA: Short Course: Smart EM Environment - An Overview from the Device-Scale to the System Planning | EMC: Electromagnetic Compatibility |
| **16:10** | **Coffee Break** | | | | | |
| Hall | Royal H | | | | | |
| 16:20 | Plenary Session<br>**Magnetic Resonance Guided Focused Ultrasound (MRgFUS) for brain surgery**<br>*Amit Sokolov (INSIGHTEC Ltd., Israel)* | | | | | |
| 16:55 | Plenary Session<br>**Self-complementary and duality in metasurfaces**<br>*Stefano Maci (University of Siena, Italy)* | | | | | |
| **17:30** | **Awards Ceremony and Closing** | | | | | |
| Hall | Royal I | | | | | |
| 18:00 | Farewell Reception<br>Sponsored by **IEEE Antennas and Propagation Society** | | | | | |

## SPECIAL SESSIONS

### COMMUNICATIONS AND SENSORS TRACK

Special Session: High Baudrate Short-Reach Communication
*Oskars Ozoliņš, Xiaodan Pang, Vjačeslavs Bobrovs*

Special Session: RFID and IoT Technologies - *Ildar Yusupov and Dmitry Filonov*

Special Session: Future of wireless communication - *Irv Kalet*

Special Session: Advanced Technologies for Next Generation Wireless Communication Systems
*Dan Raphaeli*

Special Session: IoTs Localization, Hardware Security and Trust: Threats, Countermeasures, and Design Tools - *Itamar Levi and Yiftach Richter*

### ANTENNAS, PROPAGATION, AND SCATTERING TRACK

Special Session: Novel Electromagnetic Phenomena, facing Wireless Sensing Applications
*Pavel Ginzburg*

Special Session: Metamaterial wave theory – *Yakir Hadad*

Special Session: Advanced Methods in Computational Electromagnetics
*Yaniv Brick, Vladimir Okhmatovski*

Special Session: High-Frequency Methods in Electromagnetics - *Ludger Klinkenbusch, Giuliano Manara*

Special AMTA Session: Antenna and RCS Measurements
*Claudio Curcio, Francesco D'Agostino, Lars Foged*

Special Session: Quantum Antennas and Photonic Quantum Sensing - *Gregory Slepyan, Dmitri Mogilevtsev*

Special Session: Quantum Computational Electromagnetics - *Gabriele Gradoni, Paolo Rocca*

Special Session: Current Trends and Advances in Antenna Array Synthesis
*Giovanni Toso, Paolo Rocca, and Andrea Massa*

Special Session: Doing the Smart EM Environment - From the Smart Entities Design to the System Architecture Planning - *Giacomo Oliveri, Filiberto Bilotti, Marco Di Renzo, Dario Tagliaferri and Andrea Massa*

Special Session: Antenna and Propagation for 5G and Beyond – *Yejun He*

Special Session: State of the Art Computational Methods using Auxiliary Sources
*Nikolaos Tsitsas, Amir Boag*

Special Session: Advances in Broadband and Multiband Antennas – *Meisong Tong*

Special Session: Advances in Resonant Elements and Metasurfaces for Controllable THz Wave Manipulation - *Grigorios P. Zouros, Evangelos Almpanis*

## ELECTRONIC PACKAGING & THERMAL MANAGEMENT TRACK

## BIOMEDICAL ENGINEERING TRACK

## RF/MW DEVICES AND CIRCUITS, RFIC TRACK

Special Session: High Power Electromagnetics Technologies – *Felix Vega*

Special Session: ICs and media for Terabit Communication – *Eran Socher*

Special Session: TBD – *John Papapolymerou*

## MICROWAVE SYSTEMS, RADAR, ACOUSTICS TRACK

Special Session: Automotive Radar: Trends, Innovations and Challenges - *Igal Bilik, Andreas Himmler*

Special Session: Underwater Acoustics – *Or Lasri*

## SIGNAL PROCESSING AND IMAGING TRACK

Special Session: Image and Signal Processing for Aerial and Satellite Remote Sensing – *Stanley Rotman*

## VENUE
The conference will take place at the David Intercontinental Hotel Tel-Aviv

## LANGUAGE
The official language of the Conference is English.

## REGISTRATION

| קטגוריה | הרשמה מוקדמת<br>תשלום עד 13.09.2023 | הרשמה מאוחרת<br>תשלום מ 14.09.2023 |
|---|---|---|
| שלושה ימים | | |
| משתתף | ₪ 1,840 | ₪ 2,190 |
| חברי IEEE, לשכת המהנדסים, אילטם ומרצים | ₪ 1,620 | ₪ 1,925 |
| סטודנטים/חיילים בחובה* | ₪ 1,070 | ₪ 1,260 |
| יומיים | | |
| משתתף | ₪ 1,585 | ₪ 1,760 |
| חברי IEEE, לשכת המהנדסים, אילטם ומרצים | ₪ 1,320 | ₪ 1,565 |
| סטודנטים/חיילים בחובה* | ₪ 790 | ₪ 910 |
| יום אחד | | |
| משתתף | ₪ 1,290 | ₪ 1,430 |
| חברי IEEE, לשכת המהנדסים, אילטם ומרצים | ₪ 1,100 | ₪ 1,265 |
| סטודנטים/חיילים בחובה, ו-IEEE - Life Members* | ₪ 665 | ₪ 770 |
| סטודנטים מוזל** | ₪ 385 | ₪ 445 |

**דמי הרשמה (כולל מע"מ)**

* מיועד לסטודנטים לתואר ראשון או שני, בכפוף לאישור המזכירות בה הוא/היא לומד/ת במערכת מלאה. כמו כן מיועד לסטודנטים דוקטורנטים לתואר שלישי מאוניברסיטאות המחקר (תל אביב, טכניון, בן גוריון, ירושלים, ויצמן, חיפה או אריאל) המאושרות על ידי המל"ג ובכפוף להצגת תעודת מילגאי.

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AEAI Association of Engineers, Architects and Graduates in Technological Sciences in Israel

IEEE ComSoc Israel Chapter

MTT-S IEEE Microwave Theory & Technology Society

AMTA

IEEE Public Safety Technology

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Conference Secretariat

ORTRA MEETING POINT

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