

IEEE AP/ED/MTT North Italy Chapter

Chapter Seminar

Metasurfaces for Next-Gen Applications: A Platform for Communication, Sensing, Imaging, and Sustainable Energy Innovations

Prof. Mohammad ZUBAIR
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Date: 23 April 2025

Time: 11:00

Location: online at

<https://unitn.zoom.us/j/89763049212?pwd=GxRnrHQsCH7bBM2HDBYbmlfyKc193K.1>

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This talk explores the transformative role of metasurfaces as versatile platforms for next-generation electromagnetic (EM) wave manipulation across a wide range of applications. Metasurfaces have the potential to revolutionize communication, sensing, imaging, and sustainable energy by enabling unprecedented control over EM waves in ultra-thin and highly customizable structures. The presentation will cover advanced metasurface applications, such as reconfigurable intelligent surfaces for 5G/6G communication, high-sensitivity sensors for medical and environmental monitoring, high-resolution imaging systems, and energy-efficient absorbers for solar and thermophotovoltaic devices. By examining recent breakthroughs and future directions, this talk aims to inspire innovative solutions and collaborations within the AP-S community.

Dr. Muhammad Zubair (Senior Member, IEEE) received the Ph.D. degree in electronics and communication engineering from the Politecnico di Torino, Italy, in 2015. From 2015 to 2017, he was a Postdoctoral Research Fellow at the SUTD-MIT International Design Centre, Singapore. In 2017, he joined the Information Technology University, Lahore, where he served as an Assistant Professor and was later promoted to Associate Professor in 2021. He has held visiting research positions at King Abdullah University of Science and Technology (KAUST) and the Singapore University of Technology and Design (SUTD). Since 2024, he has been affiliated with the James Watt School of Engineering, University of Glasgow, UK. His research interests include metamaterials and metasurfaces, fractional modeling, applied electromagnetics, and nanophotonics, with a focus on developing models, materials, and devices for advanced electronic and photonic technologies. He has contributed as a PI/Co-PI or researcher co-lead in projects funded by the Qatar National Research Foundation, the Higher Education Commission of Pakistan, the Punjab Higher Education Commission, the Ministry of Education (Singapore), Singapore Temasek Lab, EPSRC (UK), the US Army Research Laboratory (ARL), and the US Air Force Office of Scientific Research (AFOSR). Dr. Zubair has authored over 200 peer-reviewed journal and conference publications and co-authored two book chapters. Since 2022, he has been recognized among the top 2% of most-cited scholars worldwide by Stanford-Elsevier. His awards include the URSI Young Scientist Award, the IEEE Outstanding Chapter Award, and the Punjab Innovation Research Challenge Award. His high-impact publications have been featured in Materials Horizons Emerging Investigator 2024, Nanoscale Horizons' Most Popular Article 2023, and IET MAP Top Downloaded Paper 2024. He is a Senior Member of IEEE and a member of IET, ACES, OPTICA, and SPIE. He serves/has served as an Associate Editor for IET Microwaves, Antennas & Propagation, IEEE Access, PLOS One, and Wiley International Journal of Antennas and Propagation.

