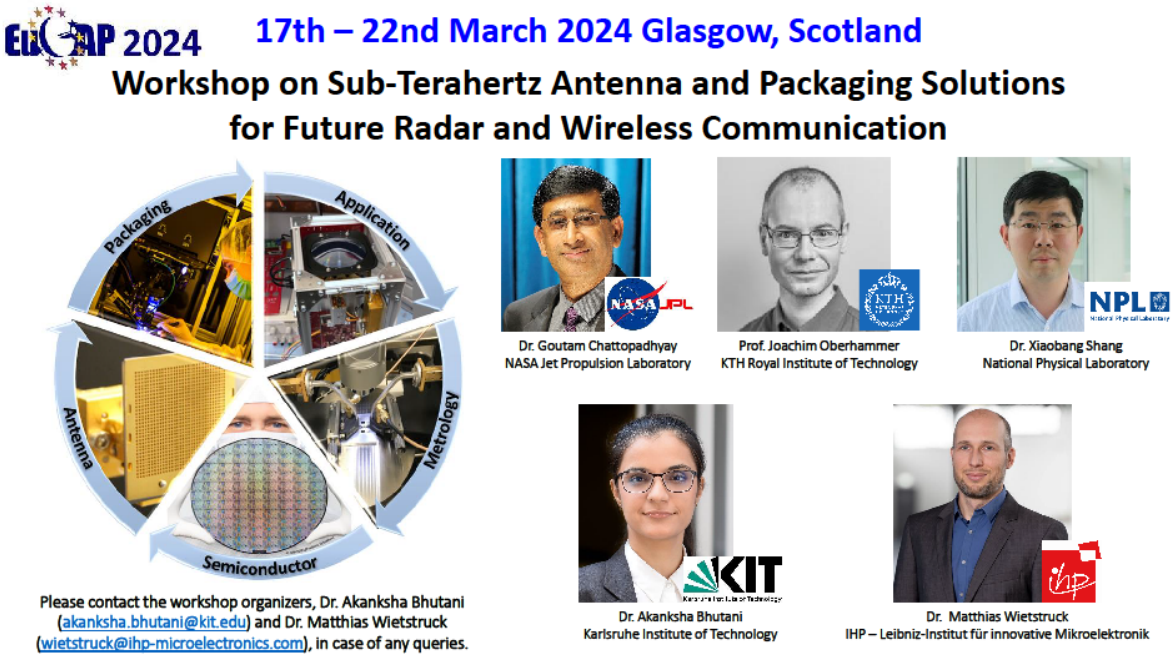
Scientific Workshop

Title: Sub-Terahertz Antenna and Packaging Solutions for Future Radar and Wireless Communication

Abstract: This workshop showcases state-of-the-art sub-THz antenna and packaging solutions for future radar and wireless systems. We begin with NASA JPL (USA) presenting sub-THz antennas and systems for space applications, followed by KTH (Sweden), which offers insights into silicon-micromachined high-gain antennas and systems operating up to 750 GHz. Next, KIT (Germany) explores Antenna□in-Package and Antenna-on-Chip solutions for compact surface-mount devices up to 420 GHz. IHP (Germany) then delves into SiGe BiCMOS technology and wafer-level packaging for sub-THz applications. The workshop concludes with a presentation from NPL (UK) discussing reliable on-wafer measurements for THz planar circuits.

Workshop outlines:

The workshop consists of five speakers from renowned research institutes in four different countries: Germany, the UK, Sweden, and the USA. Each speaker has a 35-minute presentation slot to share the latest advancements in their respective fields, collectively advancing sub-THz systems for future radar and wireless communication. After each presentation, there will be a 5-minute Q&A session for audience questions and discussions. With five speakers, each allotted 40 minutes, the total duration of the workshop will be 3 hours and 20 minutes.



Short CV of Speakers:

1. **Goutam Chattopadhyay** (Fellow, IEEE) received his Ph.D. in electrical engineering from Caltech in 2000. Currently, he serves as a Senior Research Scientist at NASA's Jet Propulsion Laboratory, Caltech, and is a Visiting Associate with Caltech's Division of Physics, Mathematics, and Astronomy. With over 350 publications and 20+ patents, his research focuses on microwave, millimeter-wave, terahertz receiver systems, radars, and space instruments. Dr. Chattopadhyay is a Fellow of the Institution of Electronics and Telecommunication Engineers (IETE, India) and an IEEE Distinguished Lecturer. He holds various leadership roles in IEEE and has received numerous awards, including the IEEE Region 6 Engineer of the Year Award in 2018.

2. **Joachim Oberhammer** (Senior Member, IEEE) received his M.Sc. in electrical engineering from Graz University of Technology in 2000 and a Ph.D. from KTH Royal Institute of Technology in 2004. Leading RF/microwave/terahertz MEMS research at KTH since 2005, he became a Professor of microwave and THz microsystems in 2015. With 100+ research articles and four patents, he's been actively engaged in IEEE, serving as a Steering Group Member and TPRC Member for various IEEE chapters and conferences. Dr. Oberhammer is also an Associate Editor for IEEE Transactions on Terahertz Science and Technology since 2018, and he received the ERC Consolidator Grant from the European Research Council in 2013.

3. **Akanksha Bhutani** earned her M.Sc. and Ph.D. in Electrical Engineering and Information Technology from Karlsruhe Institute of Technology (KIT), Germany in 2012 and 2019. Since 2019, she has been leading the Antennas and Packaging research group at KIT's Institute of Radio Frequency Engineering and Electronics. Her work focuses on THz Antennas and Packaging for radar and wireless communication. Bhutani's accolades include the "Carl Freundenberg Prize" and the "Südwestmetall Advancement Award" for her dissertation in 2019 and 2020, IEEE Microwave Magazine Best Paper Award in 2017, European Microwave Week (EuMW) Best Paper Awards in 2019 and 2022. She has authored or co-authored over 40 research papers and served as the Operations Officer of EuMW 2023 in Berlin.

4. **Matthias Wietstruck** received the Diploma degree in microsystems technology from the University of Applied Science HTW Berlin, Berlin, Germany, in 2009. Since 2010 he is with IHP – Leibniz Institut für innovative Mikroelektronik where he is currently heading the group Heterogeneous Integration of Devices and Technologies as part of the Technology department. In 2023 he received his Ph.D. in Electrical Engineering and Information Technology from Technical University Chemnitz. His current research interests include the development of wafer-level packaging components and technologies for 2.5-D/3-D heterogeneous integration with a focus on millimeter-wave (mm-wave) and subterahertz applications.

5. **Xiaobang Shang** (Senior Member, IEEE) attained a BEng degree (First Class) in Electronic and Communication Engineering in 2008 and a PhD degree in Microwave Engineering in 2011 from the University of Birmingham. He is currently a Principal Scientist at the National Physical Laboratory, UK, researching into electrical measurements at microwave, millimetre-wave, and terahertz frequencies, for future telecoms and quantum applications. He has authored or co-authored over 110 publications. Dr Shang is an Associate Editor of IEEE Microwave and Wireless Technology Letters and a member of IEEE MTT-3 and MTT-21 Technical Committees. He was the recipient of several prestigious awards including the Roberto Sorrentino Prize in 2022 and the IEEE Tatsuo Itoh Award in 2017.