

# SUNDAY 08:30 – 17:50

## Advancements in Technologies and Circuits Leading to 6G

Chair: Florinel Balteanu<sup>1</sup>

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**Room: Mission 1**



The research area of 6G RF technology is experiencing rapid growth, especially as 5G technology becomes more widespread. Future 6G networks will rely significantly on millimeter-wave (mm-wave) frequencies, reaching up to 300 GHz, crucial for achieving unprecedented data rates and connectivity. The remarkable increase in global smartphone usage has been driven by advancements in CMOS semiconductor technology, particularly at cutting-edge feature sizes like 3nm, greatly enhancing computational capabilities. The 5G mobile industry operates on a large scale, necessitating extensive testing of hardware changes and improvements to ensure functionality and reliability before mass deployment. This workshop will discuss the current 5G RF cellular technology designs, the challenges

of implementing 5G, and the expected circuit and technology advancements that will lead to 6G. Additionally, it will explore the integral role of mm-wave frequencies in future 6G networks, supported by ongoing improvements in CMOS technology that enhance performance through digital signal processing (DSP) and digital calibration.

### PROGRAMME

#### Where and how could InP be competitive versus SiGe for 6G?

Frédéric Giansello<sup>1</sup>, Pascal Chevalier<sup>1</sup>

<sup>1</sup>ST Microelectronics

#### Circuit and architecture co-design for wideband and energy-efficient 6G systems

Christian Fager<sup>1</sup>, Victor Åberg<sup>2</sup>

<sup>1</sup>Chalmers University, <sup>2</sup>Lund University

#### Recent Advancements of GaN HEMT Power Amplifiers towards 6G

Takuma Torii<sup>1</sup>, Shintaro Shirjo<sup>1</sup>

<sup>1</sup>Mitsubishi Electric Corporation

#### CMOS mmW/THz phased-array design for 6G era

Kenichi Okada<sup>1</sup>

<sup>1</sup>Institute of Science, Tokyo, Japan

#### RF Front End Modules and Evolution to 6G

Florinel Balteanu<sup>1</sup>

<sup>1</sup>Skyworks Solutions Inc.

#### Design methodology for Sub-THz Power Amplifier for D-band

Nathalie Deltimple<sup>1</sup>

<sup>1</sup>INP/ENSEIRB-MATMECA Bordeaux

#### Radio architectures and enabling technologies for FR3 infrastructure

Rui Ma<sup>1</sup>

<sup>1</sup>pSemi Murata

#### Low-Complexity Adaptive Digital Predistortion for User Equipment Linearization

Pere L. Gilabert<sup>1</sup>

<sup>1</sup>Universitat Politècnica de Catalunya