WEDNESDAY 08:30 – 12:30

RF & Sub-THz Heterogeneous Integration

WW03
EuMC/
EuMIC

Chair: Francesco Filice[1]
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Room: Juliana 3

5G and 6G applications push towards the development of highly integrated systems able to operate from sub-mm-wave up to sub-THz frequencies, leveraging both beamforming and MIMO techniques. The challenge in efficiency is tackled with heterogeneous MMIC integration. The SHIFT consortium covers a wide range of applications focusing on such topics. The workshop will aim at providing a full picture of the different actors required to realize these kinds of demonstrator, by some practical development examples and the contributions of designers and manufacturers.

Within this context, the first part will focus on the frequency range for 5G MIMO applications, showing an example of CMOS power amplifier design techniques in GaN-on-SiC addressing MIMO PA challenges. This development targets a final module consisting of a SiGe driver with a GaN power stage, with a packaging integration that allows to handle high-power signals.

A second larger part of the workshop will be devoted to the development of a beamforming D-band (140-GHz) transceiver system combining BiCMOS (B55x) and InP (EU foundry) devices by mean of advanced mm-wave PCB/packaging concepts, to address future telecommunication systems operating above 100 GHz.

Different contributions will cover this subject following a bottom-top approach, starting from the discussion of advanced IC-substrate packaging techniques and moving forward to the complete package design, considering the need for heterogeneous chip-embedding. The details of the related MMIC and antenna-arrays design will be provided.

PROGRAMME

D-band system-in-package design for 6G telecommunication modules.

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Heterogeneous Integration of 5G mMIMO SiGe Driver & GaN on SiC PA using European Sovereign Innovative Packaging Technology

Frédéric Gianesello[1]
[1]STMicroelectronics

Towards efficient radio modules beyond 100 GHz: packaging, antenna and co-design solutions

Francesco Foglia Manzillo[1]
[1]CEA - LETI

Leveraging InP D-HBT Technology for future mm-wave and sub-THz applications via hetero-integration: present situation and future needs

Bertrand Ardouin[1]
[1]III-V Lab

Enabler technologies for beyond 100GHz applications & 6G telecommunication

Daniel Schlick [1]
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