Master Theses / Research Theses:
Design of RF Analog and mm-Wave Circuits (Open Topic)

Site: Munich  Start Date: As soon as possible  Length of Contract: Temporary

Job Description

Driven by the requirement of cost reduction, the demand for high level integration of RF transceivers continuously increases. Advanced silicon-based semiconductor technologies enable a high level of integration of digital baseband with RF functionality.

The proposed theses will focus on design of circuit building blocks for highly-integrated multi-channel transceiver chipsets at mm-wave frequencies (60 GHz and higher). The potential applications include radar-based as well as communication and biomedical systems. For example, the radar-based gesture sensors at mm-wave frequencies provide a very attractive solution for sensing of human motion. The circuits are developed in Infineon’s BiCMOS technology and foundry-based advanced CMOS nodes. Detailed topics and goals will be defined on an individual basis with the potential candidates.

Hence, the purposes of the research theses are:
• Technology-dependent circuit design of critical RF and mm-Wave building blocks, such as VCO, LNA, mixer, Power Amplifier, phase shifter etc
• Investigation of circuit topologies, based on transistor characteristics.
• Design of test chips in silicon-based technologies.

Your Profile

• Good understanding of high-frequency engineering.
• First acquaintance with Cadence Virtuoso is a plus.
• MATLAB know-how.
• Basic understanding of analog and RF circuit design is an advantage.
• Capability to work autonomously and self-motivated

Please attach the following documents to your application:
• Your CV
• Copy of your certificate of matriculation at a university
• Copy of your latest study transcript
• Copy of your latest thesis (e.g. Bachelor thesis)

Task Description

• Literature research of analog, RF and mm-Wave circuits and modelling.
• Design of analog, RF and mm-Wave circuits building blocks in silicon-based technologies.
• Electromagnetic (EM) modelling of inductors and transformers in silicon-based processes.
• Chip layout of analog building blocks
• You will be able to use existing designs and all the available simulation testbenches from previous development work.

Contact
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