



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.**

Contact

Dr.-Ing. Vadim Issakov
Infineon Technologies AG
Design Lead mm-Wave CMOS
Principal Engineer

Phone: +49 89 234 22396

Email: Vadim.Issakov@infineon.com

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.

