IEEE (HK) Section
AP/MTT

Seminar On

IEEE MTT-S DML Talk on
mm-Wave System and Circuit Design for Highly-Integrated Radar Transceivers
Prof. Vadim Issakov
TU Braunschweig, Germany

Date	**:**	**15 January 2026 (Thursday)**
Time	**:**	**4:00 pm – 5:00 pm (UTC+08:00) Hong Kong**
Webinar	**:**	**Online, Zoom meeting** Meeting ID: 897 7740 3468 Passcode: 634474 Link: https://cityu.zoom.us/j/89777403468?pwd=1v5wxdp6S4OcC5bFkjLyMXvd9g7vSM.1

Abstract

This talk focusses on system and circuit design considerations for highly-integrated radar transceivers in CMOS and SiGe HBT technologies. The speaker will first provide motivation for realization of radar sensors at mm-wave frequencies by showing the possible applications. Then, frequency band allocations for radar at mm-wave frequencies are discussed. Next, speaker will discuss system level consideration in detail and will present step-by-step system design steps for an integrated fast-chirp FMCW radar transceiver, such as level budget calculation, phase noise considerations, PLL linearity, design of the analog baseband. The system considerations will be systematically translated into specifications of circuit blocks (e.g. LNA, mixer, PA, VCO, analog baseband etc.) of the radar transceiver.

Additionally, digital modulation techniques such as phase-modulated continuous-wave (PMCW) will be discussed and a systematic comparison with FMCW will be given.

Next, technology-dependent considerations and challenges related to critical building blocks are discussed (e.g. phase noise, noise figure, operating frequency, routing density, digital baseband). Then, the speaker will present several design examples of integrated radar transceivers operating at V-band and D-band and will discuss the circuit architectures. The talk is rounded out by a vision on novel modulation techniques and trends in MIMO radar array realizations

Biography

Vadim Issakov received the M.Sc. from TU Munich in 2006, and the Ph.D. degree from the University of Paderborn, in 2010. In 2010, he joined Infineon Technologies. Afterwards, he was with imec, Belgium, and then with Intel Corporation, before he came back to Infineon in 2015 as Principal mm-wave Design Engineer working on predevelopment of millimeter-wave radar products. Since April 2021 he is a full Professor at the TU Braunschweig. Dr. Issakov was a recipient of several awards including 2019 IEEE MTT Outstanding Young Engineer Award.

***** ALL ARE WELCOME *****

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