# Advances in Flexible CMOS Radio Frequency Transceivers

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## Overview

Wireless communication has become omnipresent (e.g. GSM, Bluetooth, WiFi) and the radio frequency transceiver hardware is commonly co-integrated with digital signal processing functionality on a CMOS "Systems on Chip". This course reviews architectural innovations in CMOS radio transceivers that happened roughly over the last 2 decades, moving away from traditional narrowband LC-based architectures to more flexible architectures, known under different names like reconfigurable radio transceivers, SAW-less architectures, software defined radio and cognitive radio. This course reviews the motivation for this gradual transition, reviews key technical challenges and discusses several solutions directions that have been proposed over the last two  decades. It also indicates recent trends like carrier aggregation, beamforming and full-duplex and related transceiver challenges.

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| **Course Dates** | **14th-18th November, 2016** |
| **Host Institute** | **IIT Madras** |
| **No. of Credits** | **1** |
| **Maximum No. of Participants** | **60** |
| **You Should Attend If…** | ▪ You are a student in the area  of analog/mixed signal/RF/Microwave IC design.<br>▪ You wish to learn from a world renowned expert in the area.<br>▪ You want to get up to speed on the important area of  wireless circuits and systems |
| **Course Registration Fees** | The participation fees for taking the course is as follows:<br>**Student Participants:** Rs.1000<br>**Faculty Participants:** Rs.3000<br>**Government Research Organization Participants**: Rs.10000<br>**Industry Participants:** Rs.40000<br>The above fee is towards participation in the course, the course material, computer use for tutorials and assignments, and laboratory equipment usage charges.<br>**Mode of payment: Demand draft in favour of "Registrar, IIT Madras" payable at Chennai.**The demand draft is to be sent to the Course Coordinator at the address given below. |
| **Accommodation** | The participants may be provided with hostel accommodation, depending on the availability, on payment basis.  Request for hostel accommodation may be submitted through the link:  http://hosteldine.iitm.ac.in/iitmhostel |

# Course Faculty

Eric A. M. Klumperink received his PhD from the University of Twente in 1997, and currently is an Associate Professor at the same university, teaching Analog and RF IC Electronics. Eric participates in the CTIT Research Institute, guiding PhD and MSc projects related to RF CMOS circuit design with focus on Software Defined Radio, Cognitive Radio and Beamforming. He served as an Associate Editor for the IEEE TCAS-II (2006-2007), IEEE TCAS-I (2008-2009) and the IEEE JSSC (2010-2014) and is a member of the technical program committees of the ISSCC and IEEE RFIC Symposium. Eric served as IEEE SSCS Distinguished Lecturer in 2014/2015, holds 10+ patents, authored and co- authored 150+ internationally refereed journal and conference papers, and was recognized as 20+ ISSCC paper contributor over 1954-2013. He is a co-recipient of the ISSCC 2002 and the ISSCC 2009 and the Van Vessem Outstanding Paper Award.

# Course Coordinator

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