



Highly Linear Mixer-First Receivers and N-path Filters

A lecture by

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In order to cover the ever increasing number of low-GHz radio frequency bands, highly reconfigurable CMOS radio receivers are wanted. As traditional SAW-filters limit reconfigurability and increase cost, research attempts are being made to enable SAW-less receivers. However, without much pre-filtering very high blocker tolerance is demanded for interference robustness and to handle TX leakage in Frequency Division Duplex scenarios. Passive switch-R-C circuits, also known as N-path filters, commutated filters or frequency translated filters, can offer tunable RF-filter functionality where the switch-frequency defines the RF-filter center frequency. It can also be combined with frequency conversion in mixer-first switch-R-C receivers. This talks reviews recent developments in this field, focusing on ways to improve the linearity and blocker tolerance.

Eric Klumperink received his PhD from Twente University in Enschede, The Netherlands, in 1997 where he is currently an Associate Professor. He teaches Analog and RF CMOS IC Design and guides research projects focussing on Software Defined Radio and Beamforming. Eric served as Associate Editor for IEEE TCAS-I, TCAS-II and the IEEE Journal of Solid-State Circuits (JSSC), as TPC member of ISSCC (2011-2016) and the RFIC Symposium (2011-...), and as SSC Distinguished Lecturer (2014/2015). He holds >10 patents, authored and co-authored >175 refereed journal and conference papers. He was recognized as top paper contributor to ISSCC, for >20 papers over 1954-2013, and was a co-recipient of the ISSCC 2002 and the ISSCC 2009 "Van Vessel Outstanding Paper Award".

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