



University of Pavia

Ph.D. School of School of Electronics, Computer Science and Biomedical Engineering

# SEMINAR

## E-band Backhauling Toward "The Long Reach Project"

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Cologno Monzese (MI), Italy

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Aula seminari ex Dipartimento di Elettronica, piano D

**Abstract:** 5G is going to be a revolution in all telecom market, electronic technologies and user experience. From the last 4G standard it is foreseen big gaps in terms of throughput, coverage and latency. In this scenario, the point-to-point wireless links have to move forward in order to address the market and user requirements, designed to be 10 Gbps over a hop of 10 km and only achievable with a boosted E-band link. Electronic engineers have to face this huge technological change and study the issue from both active and passive components to maximize the performance of each step of the chain. This effort is also mandatory to keep the microwave backhauling competitive with the optical fiber links, more expensive but capable of very large throughput. In order to face this challenge all new structures, materials and manufacturing techniques have to be considered for both active and passive components. The first one could have benefits from the emerging semiconductor technologies (relative to GaN, InP, SiGe, GaAs processes) and the miniaturized technology node, down to 28 nm for the RFCMOS. Passive components for mm-wave backhauling embrace mainly interconnections, filters, couplers, orthomode transducers, and antennas implemented: all of the aforementioned components have to exploit the best in terms of material and manufacturing technique to achieve the desired performance across the mm-wave frequency range.

**Bio:** Stefano Moscato received the M.S. and Ph.D. degrees in electronics engineering from the University of Pavia, Pavia, Italy, in 2012 and 2016, respectively. He was with the School of Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, GA, USA, as a Ph.D. visiting Student from 2014 to 2015. From late 2015 to 2017, he served Azcom Technology, Rozzano, Italy, as an RF Designer for LTE and 5G base stations and remote radio heads. From May 2017, he became part of the R&D microwave and mm-wave innovation group of SIAE Microelettronica. His research activities have focused on the implementation of passive components from RF to mm-wave in all standard waveguide technology, planar technology and Substrate-Integrated-Waveguide technology. He is now involved in the new techniques to enlarge the E-band wireless hop for backhauling applications. Dr. Moscato was a recipient of an IEEE Microwave Theory and Techniques Society Undergraduate/Pre-Graduate Scholarship in 2012. He was Chair of the IEEE Student Branch, University of Pavia, from 2013 to 2016.

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