

Scientific curriculum of Giuseppe Palmisano

Giuseppe Palmisano received the Laurea degree in Electronic Engineering from the University of Pavia, Pavia, Italy, in 1982. From 1983 to 1991, he was involved in research activity in the field of CMOS and BiCMOS analog integrated circuits, at the Department of Electronics of the University of Pavia. In 1992, he was visiting professor at UAM (Universidad Autonoma Metropolitana) in Mexico City where he held a course on Microelectronics for the Ph.D. students. In 1993 and 2000, he joined the Faculty of Engineering at the University of Catania as Associate Professor and Full Professor, respectively, teaching Microelectronics. Since 1998, he is in the teaching board of the Ph.D. course in Systems, Energetics, Informatics and Telecommunications Engineering of the University of Catania. He is the co-author of more than 250 papers in international journals and conference proceedings, around 50 international patents, and 3 books.

Since 1999, he has been leading the “*Radio Frequency Advanced Design Center*” (RFADC), a joint research structure supported by University of Catania and STMicroelectronics (ST), Catania site. RFADC claims a long and recognized experience in the research area of analog integrated circuits (ICs) with special emphasis on radio frequency (RF) and microwave ICs for wireless communications. The research group he conducts includes final-year students, Ph.D. students, young graduates with research contracts, UNICT researchers, as well as ST engineers and technicians. The technical expertise of the RFADC research group covers the skills of integrated circuit and system design, passive component design and modelling, electromagnetic simulations, layout and test-board design, and experimental characterization. RFADC takes advantage of a Design Lab and a Measurement Lab. The Design Lab is equipped with workstations, a server, and CAD tools such as Keysight_ADS, Ansys_HFSS, Cadence, etc. The Measurement Lab is equipped with a Cascade Microtech probe station for on-wafer characterization with multi-harmonic source and load-pull capabilities and test benches for measurements of assembled ICs. The test equipment is suitable for measurements of power, noise, spectrum, and S-parameters up to 50 GHz. Most of the measurement equipment was acquired in 2002/03 thanks to a remarkable funding from the “*National Operative Program: Scientific Research, Technological Development, Higher Training*” for southern Italy.

Giuseppe Palmisano started his research activity in the University of Pavia in 1983 working with CMOS and BiCMOS technologies and mainly facing the design of switched-capacitors (SC) circuits, operational amplifiers and data converters for the analog base-band of mobile communication transceivers. In the last two decades at the University of Catania, he has been facing

the implementation of high-performance ICs, which include power amplifiers (PAs) for cellular and WLAN applications, the LNB for the digital satellite TV, 24-GHz and 77-GHz automotive short and long radar sensors, ultra-low power RF front-ends for wireless sensor networks (WSN), remotely powered battery-less transceivers with energy harvesting, and wireless power/data transfer systems with galvanic isolation.

He has been working with several silicon platforms such as pure bipolar SiGe, SiGe BiCMOS, and nanoscale CMOS technologies, using both fully integrated approach for System on Chip (SoC) solutions and hybrid approaches for System in Package (SiP) implementations with different substrates. Recently, he also worked some years on integrated circuit design with organic TFT technologies on plastic substrate within European research projects. Presently, he is involved in a research activity addressed to the implementation of a 77-GHz automotive radar sensor in an FD-SOI 28-nm CMOS technology in collaboration with STMicroelectronics.

He has been actively involved in the collaboration within European research projects with important international institutions among which the Fraunhofer Institute, the Commissariat Energie Atomique (CEA), the Centre Suisse d'Electronique et de Microtechnique (CSEM). The research achievements within these collaborations are demonstrated by several publications in the most important international journals and prestigious international conference presentations.

He was scientific responsible for the University of Catania of several national and European funded research projects as well as of industrial research programs. Some of these projects are listed below.

National Projects

2003-2006: National Italian research project FAR no. 847 (D. Lgs. 297/1999): “System-in-Package (SiP) RF Front-end for W-CDMA applications”;

2008-2010: Italian research project of national interest PRIN 2007: “Design and implementation in a nanoscale CMOS technology of a radio front-end chip-set for microwave applications”.

European Projects

2001-2005: European project FP5 PERLA IST-2000-30132: “HBT integrated SiGe transceiver for HIPERLAN”;

2010-2013: European project FP7 COSMIC: “Complementary Organic Semiconductor and Metal Integrated Circuits”.

2010-2012: European project FP7 FlexNet: “Network of Excellence for building up Knowledge for improved Systems Integration for Flexible Organic and Large Area Electronics (FOLAE) and its exploitation”.

2010-2013: European project ENIAC: “Model, solutions, methods and tools for energy-aware design”

Industrial Funded Research Projects

2008-2010: Battery-less RF front-end for wireless sensor networks (WSN);

2005-2010: Ultra-low power and ultra-wideband transceiver for low-data rate wireless sensor networks (WSN);

2006-2008: 24 GHz and 80 GHz radar sensor in BiCMOS technology;

2005-2007: Highly integrated solutions for efficient and reconfigurable CMOS RF power amplifiers.