



## Roberto Sorrentino and his contributions to the microwave community

Alessandra Costanzo<sup>(1)</sup> and Luca Perregrini<sup>(2)</sup>

(1) Department of Electrical, Electronic and Information Engineering, University of Bologna, Bologna, Italy

(2) Department of Electrical, Computer, and Biomedical Engineering, University of Pavia, Pavia, Italy

### Abstract

This work is "*in memoriam*" of Roberto Sorrentino, a great colleague of us who passed away in March 2020. Roberto was known worldwide and contributed at different levels to our international scientific community and in particular to URSI and to URSI commission D where she acted as vice-chair (1993-1996) and then chair (1996-1999) In the following it will be given a comprehensive picture of the many activities he promoted and led.

Roberto graduated at the University of Roma La Sapienza, where he also started his academic career in 1974. In 1986 he became full professor at Tor-Vergata, the second university of Rome, and finally in 1990 he moved to the university of Perugia where he concluded the academic career in 2017.

During his career he addressed several research topics, always giving relevant contributions that have been followed by many researchers worldwide. Just to cite some of them he actively contributed to the deep understanding of electromagnetic wave propagation developing original numerical methods and CAD techniques for the analysis and design of microwave components. Many of these approaches are currently adopted in commercial software tools. Beside this, he was also prolific in more application-oriented activities, such as beam forming networks for modern satellite antennas [1] new components, filters, and reconfigurable devices, including MEMS.

For one of these innovative microwave devices, a dual-mode filter [2], he was awarded the Microwave Prize. This is a prestigious recognition presented yearly by MTT society to the best paper published in any of his publications. More recently he has been dedicated to develop theoretical approach to tackle in a unified way the wireless interaction between the transmitter and a receiver frontends when they are either in their respective near-field or far-field regions and he has exploited this approach for the optimum design of links for energy transfer purposes [3].

He has published more than 150 technical papers in international journals and more than 200 conference papers and 5 books.

Roberto Sorrentino was an outstanding scientist he was able to combined excellence in different fields. He was a dedicated instructor and this is testified by many of his former PhD students that are now well-respected

members of the microwave community, in Italy and internationally.

Roberto was also extremely active on the organization side. Not only he actively participated into several committees, but also he promoted, founded and chaired scientific societies. In particular, in 1998 he was one of the six founders of EuMA. He was also a member of the MTT-S administrative committee, he was a key-person at national level, and he was among the founders and the first president of the Italian Electromagnetic Society. He was instrumental to establish a longstanding and fruitful relation between EuMA and APMC.

In 2019 he organized the Italian National URSI Committee Meeting collocated with the IEEE RFID-TA conference and the Young Scientist Best Paper Award was organized by the URSI Italian National Committee for Young Scientists doing research on topics belonging to all of the URSI Commissions.

He was always a communicative person with an open and friendly attitude, building bridges, bringing people together. But Roberto Sorrentino was not only an academic. In 2007 he founded the company RFmicrotech with some former students. Today, employs more than 25 people with high degree of qualification and offer design service worldwide and has several contracts with the European space agency.

During his career, Roberto Sorrentino received several awards for his service to the community. The last one, the Grand Officer of the Order of Merit of the Italian Republic, was announced few months before his passing conferred by the Head of State, Sergio Mattarella. This is a very prestigious recognition given by the Italian President to people that highly contributed to the reputation and development of the Italian Country.

### References

- [1] F. Alessandri, M. Mongiardo and R. Sorrentino, "Computer-aided design of beam forming networks for modern satellite antennas," in *IEEE Transactions on Microwave Theory and Techniques*, vol. 40, no. 6, pp. 1117-1127, June 1992.
- [2] S. Bastioli, C. Tomassoni and R. Sorrentino, "A New Class of Waveguide Dual-Mode Filters Using TM and Nonresonating Modes," in *IEEE Transactions on Microwave Theory and Techniques*, vol. 58, no. 12, pp. 3909-3917, Dec. 2010.

[3] A. Costanzo et al., "Electromagnetic Energy Harvesting and Wireless Power Transmission: A Unified Approach," in Proceedings of the IEEE, vol. 102, no. 11, pp. 1692-1711, Nov. 2014.