Duration:14:20 to 18:20 **Room: 15**

SCM01

The Basics of Travelling Wave Tube Amplifiers

Organisers

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Abstract

Advanced RF/microwave applications demand power amplifiers with ever greater linear power in conjunction with high efficiency and bandwidth at a low cost. As a result, power amplifiers are considered as the most critical and expensive component in a RF-front module, like satellite communication systems and transponders, RADAR transmitters, EMC tester, jammers, etc..

So far solid state electronics is not able to respond to this quest, especially when tens of Watts in the millimeter-wave range are required.

Travelling wave tube amplifiers (TWTs) are predicted to remain the only solution for high frequency, wide band and high power amplification in the neart future. However, TWTs are “obscure” components for the vast majority of microwave designers.

The Short Course on The Basics of Travelling Wave Tube Amplifiers is conceived to give the attendees understanding of the latest stat-of-the-art TWTAs operation with focus on high frequency space applications.

It will start providing a summary of the main applications and related requirements impacting the amplifier design and will then address the basic principles of operation of the main functional building blocks with focus on slow wave structures.

Then, to facilitate the comprehension of these blocks, the course will present a practical perspective of the application of available design tools. The attendees will be invited in an interactive discussion on all the steps comprising the design of a TWT from the synthesis of the requirements up to the performance verification.

Programme

14:20 – 14:30	***Welcome***
14:30 – 15:00	***Microwave Tube, a Key Element in the Modern World of Communication*** Ernst Bosch, Thales Electronic System GmbH , Ulm , Germany
15:00 – 15:30	***TWT Basic Operation Principles and Building Blocks*** Rosario Martorana, Finmeccanica, Palermo, Italy
15:30 – 16:00	***Slow Wave Structures for Micro- and Millimeter- Waves*** Claudio Paoloni, Lancaster University, UK
16:00 - 16:40	***Coffee Break***
16:40 – 17:25	***Materials and Techniques in TWT Manufacturing*** Roberto Dionisio, ESA ESTEC, Noordwijk, The Netherlands
17:25 – 18:10	***Traveling Wave Tube Design with Simulation*** Monika Balk, CST AG, Darmstadt, Germany
18:10 - 18:20	***Open Discussion and Concluding Remarks***