Duration: 13:50 - 17:50
Room: Neu Delhi

WS-15
The Basics of Traveling 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 components in an 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 millimetre-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 next future. However, TWTs are “obscure” components for the vast majority of microwave designers.

This workshop on The Basics of Travelling Wave Tube Amplifiers is conceived to give the attendees understanding of the latest state-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 to 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

13:50 - 14:00 Welcome

14:00 - 14:30 Microwave Tubes, a Key Element in the Modern World of Communications
Christof Dietrich, Thales Electronic Systems GmbH, Germany

14:30 - 15:00 TWT Basic Operation Principles and Building Blocks
David Bisconti, Finmeccanica, Italy

15:00 - 15:30 Slow-Wave Structures for Micro- and Millimeter-Waves
Claudio Paoloni, Lancaster University, UK

15:30 - 16:10 Break

16:10 - 16:55 Materials and Techniques in TWT Manufacturing
Roberto Dionisio, ESA ESTEC, The Netherlands

16:55 - 17:40 Traveling Wave Tube Design with Simulation
Monika Balk, CST AG, Germany

17:40 - 17:50 Open Discussion and Concluding Remarks