IW5 - Next-Gen Antenna Array Systems: Design, Simulation, and Optimization

Abstract:

This workshop explores advanced methodologies for developing next-generation antenna array solutions. Participants will learn how to leverage CST Studio Suite's high-performance solvers for large antenna arrays, including array synthesis through Antenna Magus, automated design workflows in CST Studio Suite, and non-parametric optimization using Tosca. The session also highlights SIMULIA IVCAD tools, demonstrating unified modelling and simulation of antenna arrays integrated with active front-end circuits to improve overall system performance. Attendees will gain practical insights into state-of-the-art design and optimization for modern antenna array technologies.

Workshop Outline:

This workshop features three expert-led presentations.

The first talk covers modelling and simulation of antenna arrays, demonstrating CST Studio Suite's built-in array tools, array synthesis with Antenna Magus, and CST's advanced solvers for large arrays. The second presentation focuses on Tosca and its integration with CST, enabling next-generation optimization methods—such as topology and shape optimization—that were previously not achievable. The final talk highlights SIMULIA's IVCAD Suite, showcasing its integration with CST and its ability to evaluate overall system performance, including nonlinear effects from active RF front-end components like power amplifiers.

Together, the sessions provide a comprehensive view of modern phased-array design.

Instructor:

Sajid Asif, with over 17 years of experience, is an Industry Process Consultant at Dassault Systèmes, driving SIMULIA technical engagements in the Electromagnetics domain across multiple industries.

A seasoned RF & Antenna Engineer, he has designed and tested advanced RF/microwave circuits and phased array antennas for Satcom and terrestrial applications. Alongside his industry work, he has contributed as a researcher and lecturer at several academic institutions. Dr. Asif holds a Ph.D. in Electrical & Computer Engineering from North Dakota State University, and is a senior member of IEEE and member of IET.