Analysis and Design of Advanced Antenna Systems using TICRA Tools

Abstract:

TICRA has for decades developed state-of-the-art antenna design and analysis software that is the industry standard for satellite antenna designers and manufacturers. The antenna software tools are available in the common TICRA Tools framework and comprise:
- GRASP (competitive reflector antenna solutions)
- POS (reflector shaping and array optimization)
- ESTEAM (general antennas and scattering by large structures)
- CHAMP 3D (passive waveguide components and complex feed chains)
- QUPES (quasi-periodic surfaces, e.g., reflectarrays and FSS)

TICRA Tools has the advantage of offering the same user experience whether you are using the program for reflector antennas, feeds and waveguides, reflectarrays, or platform scattering. In addition, certain features are available for all the products in TICRA Tools, e.g., general optimisation capabilities.

In this workshop, we will present the most important research results conducted by TICRA, on which the electromagnetic algorithms of the software products are based. Also, it will be demonstrated how the products work seamlessly together within TICRA Tools and how they can be used to design advanced antenna systems. Finally, an overview of the upcoming software products, their state-of-the art implementation and typical application cases will be given.

Workshop outline:

The workshop will combine presentations and software demonstration and it will be divided into three parts:

1. Introduction to TICRA Tools and underlying research
2. Software demonstration of analysis and design of advanced antenna systems
3. Overview of the upcoming software products, their state-of-the art implementation and typical application cases.

The speakers will be Dr. Cecilia Cappellin and Dr. Min Zhou.

Cecilia is Head of the Applied Electromagnetics Team and Product Lead for Reflector Antenna Systems Designs. She has a PhD from the Technical University of Denmark (DTU) and more than 15 years of experience in electromagnetic modelling of reflector antennas. She is currently deeply involved in the ESA/EU activities on large mesh reflectors and advanced multi-beam radiometers for future ocean observations. As a member of the AEM team she actively participates in the test and development of all TICRA software products and assists TICRA's customers under their technical support contract.

Min manages the Computational Electromagnetics Team and he performs research and development for computational techniques and antennas for space applications as well as software development for TICRA's software packages. Min began his career in TICRA in 2009 when he started his PhD that aimed at improving the design and analysis accuracy of printed reflectarrays. He is Product Lead for Reflectarray & Periodic Structures.