



## ***Short Course on EM modelling***

**Thursday, October 22<sup>nd</sup> 2020**

### **Abstract:**

The aim of the Short Course on electromagnetic modelling is to cover fundamental and practical issues of computer modelling with different numerical methods. The Short Course will present to its attendees an overview of modelling techniques. The focus will be given to two most popular discrete numerical methods: Finite Element Method and Finite Difference Time Domain method, addressing fundamentals, advantages, and basic causes of errors. The theoretical lectures will be supported with hands-on sessions, delivering practical experience with two different electromagnetic solvers, QuickWave and InventSim, based on FDTD and FEM methods. The Short Course will be summarised with successful practical and industrial user cases on application of electromagnetic modelling, dedicated to variety of research areas, starting from bio-medical research, through cosmic application, to effective filters' optimisation and tuning.

The Short Course attendees will be provided with a **three-month trial licence of full-capability QuickWave software** and **one month evaluation licence of InventSim**.



## ***Short Course Agenda***

9:00	Introduction to the Short Course
9:05	Introduction to EM modelling techniques
9:20	Electromagnetic modelling with Finite Element Method (FEM) Dr. Grzegorz Fotyga
9:50	Electromagnetic modelling with Finite Difference Time Domain method (FDTD) Dr. Marzena Olszewska-Placha
10:20	Coffee break
10:25	<i>Hands-on session:</i> Introduction to design of microwave devices (including BoR structures) using FDTD solver QuickWave Dr. Marzena Olszewska-Placha
11:25	<i>Hands-on session:</i> Introduction to filter design using 3D FEM solver InventSim Prof. Adam Lamęcki
12:25	Lunch break
13:30	<i>Case Study #1:</i> Application of EM modelling in bio-medical research Prof. Per O. Risman
14:00	<i>Case Study #2:</i> Application of EM modelling in cosmic research Dr. Marzena Olszewska-Placha
14:30	<i>Case Study #3:</i> Advanced filter optimization and tuning with InventSim Prof. Adam Lamęcki
15:00	Questions & concluding remarks