17TH MEDITERRANEAN MICROWAVE SYMPOSIUM (MMS2017)

WORKSHOP

NEW SOLUTIONS FOR INNOVATING LEARNING FOR ELECTROMAGNETISM TEACHING

NOVEMBER 27, 2017 – MARSEILLE, FRANCE

The workshop is opened to the registered participants to MMS2017

The workshop will take place on the Saint Jérôme Campus, at Institut Fresnel.

Program:

9h30 : Active learning in Electromagnetics: why and how? *(Iannis Aliferis, Nice, France)*

We will go through a guided tour in active learning, giving some evidence-based reasons to adopt this approach as well as several paths to follow to get there (papers, books and other resources). As an example, we will have a close look at the transformation of two introductory-courses on Electromagnetics, from traditional to active setting.

11h00 : Coffee break

11h15 : Use of 3D simulation tools for pedagogic purposes *(Hassan CHREIM, CST MS. France)*

8000 years after the apparition of the first sapiens on earth, James Clerk Maxwell finally decoded the mystery of the electromagnetic field propagation via his famous 4 equations. However, if one of us is confronted nowadays to understand the behavior of a complex radiating structure or any other kind of systems that touch the electromagnetic domain just by looking at the 3D model, we could still wait for another 8000 years to get results. 3D simulation tools allow to discretize these kinds of models and resolves Maxwell equations in each sub domain and can give us a lot of clues on how these structures operate by providing us images of the field which is actually invisible to us. These tools also allow us to

12h15 : Lunch

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Sponsors :

13h45 : Back to basics: an electromagnetic concepts test session *(Iannis Aliferis, Nice, France)*

Since the early publications on the Force Concept Inventory (FCI), it became clear that students' ability to solve physics motion problems expressed in mathematical language does not necessarily imply their understanding of the underlying concepts. Several concept-inventories have been developed these last years in various disciplinary areas, among which we find the Conceptual Survey of Electricity and Magnetism (CSEM), a widely-used tool to assess students' knowledge before or after a course (pre/post-test). During this session we will go through the 32 multiple-choice questions of the CSEM and you will be asked to take the test using clickers, anonymously. Some peer-instruction mini-sessions might be helpful while going back to basics.

14h45 : Coffee break

15h15 : INSA Euro-Méditerranée, an innovative international model What is the impact in teaching and learning ?

(M'hamed Drissi, F. Kieffer, C. Marange, J.Y. Plantec, E.Smigiel, Groupe INSA France)

1. INSA EM : objectives and consortium
2. INSA Model and curricula
3. Organization and equipments
4. What is the impact in teaching and learning
   4.1. Focus on the active environment and the student's role, examples
   4.2. Focus on the changing in teaching style, examples
5. Conclusion

Iannis Aliferis *is with the Electronics, Antennas and Telecommunications Laboratory (LEAT), Université Côte d'Azur, CNRS, France. His research activity concerns electromagnetic imaging, forward and inverse scattering problems. As a teacher, he is practicing and diffusing active learning (flipped classroom, faculty training). He is the director of the faculty training program on active learning at the University Côte d'Azur.*

Hassan Chreim *completed his PhD in the XLIM laboratory-University of Limoges, France where his main subject was the design of the meta-materials based cylindrical antennas. In 2009, he worked for the same laboratory on a project involving important partners in the spatial domain like Thales Alenia Space(TAS), the French National Center for Spatial Studies (CNES) and the European Space Agency (ESA). The project concerns the design of a multi-spots antenna, to be placed on a satellite platform in order to guarantee the coverage of the European continent. In 2014, Hassan joined CST - Computer Simulation Technology as an application engineer with an expertise in Microwaves domains. Since then, he acquired some knowledge about Multiphysics, low frequency and EMC simulations*

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