



SEMINAIRE INTERNE EXCEPTIONNEL
(de 13h à 14h, salle Belledonne, IMEP, MINATEC)

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“Numerical simulation and modeling of solar cells”

by Mauro ZANUCCOLI

Abstract: The analysis and the modeling of solar cells is becoming strategic in order to improve the conversion efficiency and to reduce the cost-per-watt in photovoltaic solid state devices. In this presentation the main activities involving the numerical modeling group of ARCES (Cesena Campus of University of Bologna), will be described. In particular the research activity of the team is focussed on the investigation of high efficiency mono-cristalline solar cells and of amorphous silicon thin film solar cells. After a quick introduction to the simulation flow, the presentation will describe some of most relevant investigated devices as well as the advanced optical modeling tool for nanostructured optoelectronic devices that is currently under development.

Mauro Zanucoli received the master degree in electronic engineering from University of Bologna in 2000. From 2000 up to 2006 he has been working for Datalogic S.p.A. (Bologna, Italy), a world-class producer of bar code readers, data collection mobile computers, RFID and vision systems as hardware and software designer. Currently he is Ph.D student in the European Ph.D program in Information Technology at the Advanced Research Center on Electronic Systems for Information and Communication Technologies E. De Castro (ARCES), University of Bologna. His main scientific interests are the numerical modeling, the simulation and the experimental characterization of solar cells and the optical simulation of submicron optoelectronic devices. Currently he is working on the modeling of high performance monocrystalline solar cell and of thin film amorphous solar cells. Since 2010 he is contributing to the development of an advanced method for optical simulation of nanostructured devices based on Fourier optics with the Institute of Physics & Technology (FTIAN) of the Russian Academy of Sciences (RAS), Moscow. He has been visiting student in 2008 and 2009 in Applied Materials, Santa Clara, US and in 2010 in FTIAN, Moscow.

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