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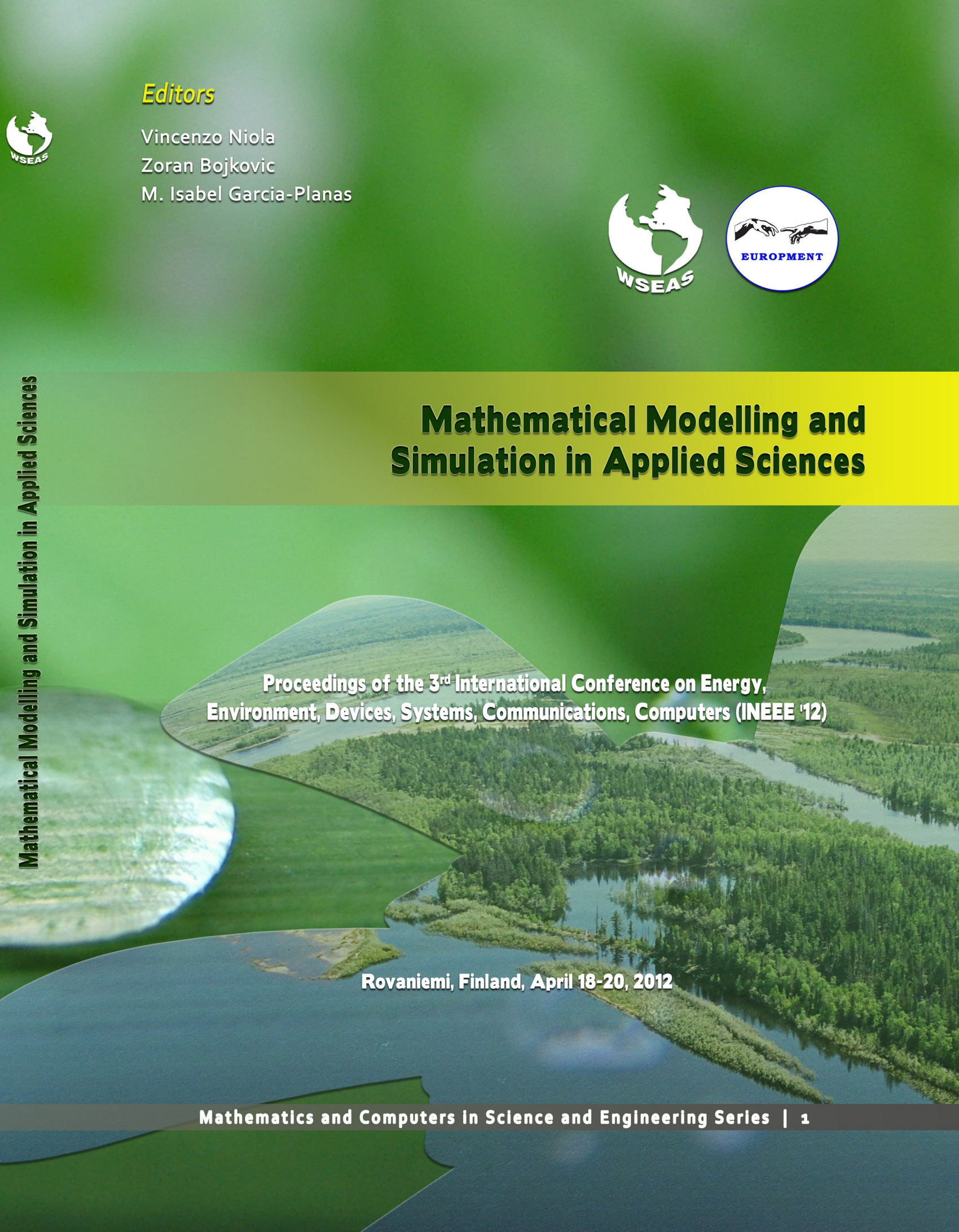

Proceedings of the 3rd International Conference on Energy, Environment, Devices, Systems, Communications, Computers (INEEE '12)

Rovaniemi, Finland, April 18-20, 2012

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Plenary Lecture 1

Input observability analysis of Fixed speed wind turbine

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Abstract: This paper deals with the concept of input observability in a exed speed wind turbine. A linear system has been calculated from the nonlinear equations of the squirrel cage induction generator, supposing it connected directly to the grid and assuming a steady state operating point. The observability of the input from the output of the system could be an interesting way to know if its possible to develop some new controls without introduce special sensors in the system. This is join work with Jose Luis Domiguez-Garcia and Begona Mediano-Valiente.

Brief Biography of the Speaker: Professor Dr. Maria Isabel Garcia-Planas joined the Department of Applied Mathematics at the “Universitat Politecnica de Catalunya” Barcelona, Spain in 1981. Her work had been centred on Linear Algebra, Systems and Control Theory. She has authored over eighty papers and serves on the referee on several journals. She has been plenary Speaker in WSEAS Int. Conf. on Applied and Theoretical Math, Vravrona, Grecia (2000), WSEAS International Conference SIM'01, Qawra, Malta, (2001), 6th WSEAS CSCC, Creta, (2002), 4th WSEAS-ISTACS. Puerto de la Cruz, (2004), 8th WSEAS Int. Conference on Applied Mathematics, Puerto de la Cruz, (2005), 11th WSEAS Int. Conf. on Systems, Creta, (2007), Applied Computing Conference, Istanbul Turkey, (2008). International Conference on Energy, Environment, Devices, Systems, Communications, Computers (EEDSCC '11) Venice, Italy (2011).

Plenary Lecture 2

Decentralized cyber secure public safety communications and information management systems for a multi organizational environment

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Abstract: The military (MIL), public protection and disaster relief (PPDR) as well as critical infrastructure protection (CIP) actors have multiple similar needs. Similarities in disaster relief mission scenarios include 1) serious disruptions in expected functionalities of critical infrastructures, e.g. transport, supplies, infrastructures, 2) operations in remote areas without communication infrastructures, 3) cross border/multi national teams, 4) high request for interoperability, 5) no remaining infrastructures after a serious disaster, 6) congestion or no use of commercial networks, and 7) utilizing both AdHoc networks and permanent infrastructures. Similarities in command and control communications involve 1) need to receive information on the operational environment, 2) need for the decision maker to watch operation (live feed), 3) need to decide and emanate orders, and 4) need to assess the evolution of the operational situation after decision. A common cyber secure voice and data network for MIL, PPDR and CIP brings synergy and enables interoperability; separate networks are wasting of resources. This lecture focuses on future broadband data communication needs of MIL, PPDR and CIP actors and presents a new cyber secure data communications network structure for a multi organizational environment. The architecture is fully decentralized and all critical communication paths have redundancy. Although having common physical connections, all network actors and elements (multichannel routers, nodes) are identified as well as every organisation's all user levels and their rights to different data sources are known. The decentralized architecture based on the Distributed Systems intercommunication Protocol – DSiP is highly fault-tolerant in normal conditions as well as in crises. The software-based approach is independent from different data transmission technologies, from IP core networks as well as from services of telecommunication operators. The solution enables to build a practical and timeless cyber secure data network for multi organizational environment, which being fully decentralized is hard to injure. The networks of different organizations are virtually fully separated, but if wanted they can exchange messages and other information which makes them interoperable.

Brief Biography of the Speaker: Dr. Jyri K. Rajamaki received his M.Sc. degree in electrical engineering from Helsinki University of Technology (HUT), Finland in 1991, and Lic.Sc. and D.Sc. degrees in electrical and communications engineering from HUT in 2000 and 2002 respectively. From 1986 he works for Telecom Finland. From 1996 he was with the Safety Technology Authority of Finland where his main assignment was to make the Finnish market ready for the European EMC Directive. Since 2006 he has been with Laurea University of Applied Sciences, Espoo, Finland, where he serves as a head of Laurea's Data Networks Laboratory. Dr. Rajamaki had 17 years experienced in electro technical standardization, e.g. being 7 years the Secretary of Finnish national committee on EMC, and 10 years the Chairman of Finnish Advisory Committee on EMC. He has been a member of several EC working groups, e.g. EMC-ADCO, EMC Working Party. His research interests are electromagnetic compatibility (EMC) as well as ICT systems for private and public safety and security services. He has been scientist in charge for several research projects funded by EURESCOM or the Finnish Funding Agency for Technology and Innovation. E.g., he has been the Scientific Supervisor and Director of the following research projects: SATERISK (focusing on risks and challenges of satellite tracking in cross-border operations), Rescuing Intelligence and Electronic Core Applications RIESCA (risks analysis of essential CIIP systems and a method to minimize risks in new system), MACICO (develops a concept for interworking of security organisations dealing with cooperation of security organisations that do not use the same radio network in their day-to-day job, but in some missions could benefit from infrastructure sharing) and Mobile Object Bus Interaction MOBI (enhances ICT integration of emergency vehicles and creates a base for an emergency vehicle concept suitable for export.) He is author of more than 60 papers published in international journals and conference proceedings.

Plenary Lecture 3

Mobile Radio Handsets without Antenna

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Abstract: The main challenges in the design of mobile handset antennas are related to achieving high total efficiency with small internal radiators. In this article, we propose a radical solution (MB antenna) to this problem by removing the need for any special antenna as the radiating element in the mobile handsets. The proposed solution consists of using of mobile handset printed circuit board (PCB) as the radiating element. Simulation and experimental results show that the MB antenna performs as a symmetrical dipole in terms of radiation pattern, gain and efficiency.

Brief Biography of the Speaker: Dr. Motti Haridim received his M.Sc. in electrical engineering from the University of Washington in 1986 and his Ph.D. in electrical engineering. from Technion Israel (1992). Since 1994 he has joined HIT- Holon Institute of Technology. During 2002-2008 Prof. Haridim was the head of the Dept. of Communication Engineering at HIT. His research activities focus mainly on the physical layer of communication systems, including optical communications, RF communications, and antennas.
He specialized in SAR reduction methods, and conducts few R&D groups developing a new method for controlling the near field of linear antennas. He has published over 80 papers on theoretical and applied aspects of antennas, RF communications and optical communications in international journals, conference proceedings and invited books.