

IEEE Benelux Section Meet the Fellows 2011



Date: **16th of February 2011**

Where: **Arenbergkasteel, Kasteelpark Arenberg 1, 3001 Heverlee, Belgium**

<http://www.esat.kuleuven.be/english/info/route>

19h30: **Welcome speech** (*Georges Gielen – Section Chair 2009-2010*)

Introduction on the Benelux Section & Approval of the Benelux ExCom 2011-2012

20h00: **Robert Puers** - *IEEE Fellow 2011, K.U.Leuven*

Implantable Microelectromechanical systems

Medical Microsystem research at ESAT-MICAS - It will be shown how in a period of 30 years, the research topic of MEMS and implantable electronics has evolved from simple FWO projects to an international recognized research centre. The main research drivers were implantable sensing systems for wireless monitoring of patients and animals. Devices developed range from bladder and eye pressure monitoring, over orthopedic implants equipped with sensors for diagnosis and improved therapy, to implanted pumps for assisted blood perfusion in e.g. the liver organ. To this purpose, the technological facilities that enabled several generations of Ms and PhD students to gain hands-on expertise in the field of MEMS design and fabrication, and small sized medical implants had to be established and maintained. The success of this effort recently evolved in the decision by the University Authorities to support the research with an entirely new lab, that provides a multidisciplinary core facility to enhance existing research, as well as to enable new collaborations, especially in the field of biomedical engineering.

20h30: **Jean-Paul Linnartz** - *IEEE Fellow 2010, Eindhoven University of Technology*

Security with noisy data

Traditional security algorithms require cryptographic keys that are perfectly reproducible. Even the smallest misspelling in a computer password leads to a completely different output after applying a hash function. When biometric features or random process spreads in an IC are used to create a cryptographic key, special preprocessing is needed to ensure exactly reproducible results. Ensuring that this preprocessing does not reveal any information about the secret keys, has been the key breakthrough, which is currently commercialized by two ventures in Eindhoven. It enables the secure and tamper-safe storage of secrets in ICs for mass market electronic devices and in smart cards. Also, it allows the secure use of biometrics even in cases

where the verifying party (e.g. foreign governments, local shops, bars, operators, public transport) may not fully trustworthy.

21h00: **Michel Defrise** – IEEE Fellow 2011, University hospital UZ-VUB

Thoughts on mathematics, electrical engineering, and tomography

After rapidly zooming down from the electrical engineering research field to three-dimensional tomography with ionizing radiation and related mathematical and algorithmic problems, the talk will focus on recent results, which have modified the understanding of data sufficiency and stability for tomographic image reconstruction from incomplete data. The practical impact of these results will be briefly discussed.

21h30: **Reception**

At the reception you will have the opportunity to gain some information about the procedure to become an IEEE Senior Member or IEEE Fellow.