

Dear Colleagues and students,

A talk is schedule on 11th Sep. 2018. Please attend. The details are provided below.

Title: "Can You Hear Me? An Introduction to Hearing, Hearing Loss, and Hearing Instruments"

Who: Rainer Martin, Institute of Communication Acoustics, Ruhr-Universität Bochum, Germany.

When: 11th Sep. 2018 from 5PM to 6PM.

Where: Room No. 119.

Abstract: Hearing instruments like cochlear implants and hearing aids can help to overcome hearing impairment. They help millions of hearing impaired people to participate in social life and to contribute productively in the workplace. The WHO estimated in 2005 that 278 million people worldwide had moderate to profound hearing impairment and that hearing impairment will place an increasing burden on human health. Meeting this challenge, hearing instruments play a crucial role for the rehabilitation and the well-being of millions of hard-of-hearing people.

I will begin my presentation with fundamental aspects of hearing and the consequences of hearing loss. Then, I will discuss the technology of hearing aids and cochlear implants. Although hearing instruments have already evolved from simple analogue amplification devices to sophisticated miniature computers, a number of significant challenges remain. Therefore, I will conclude my talk with an introduction to signal processing challenges and potential solutions in hearing instruments.

Bio: Rainer Martin received the M.S.E.E. degree from Georgia Institute of Technology, Atlanta, in 1989 and the Dipl.-Ing. and Dr.-Ing. degrees from RWTH Aachen University, Aachen, Germany, in 1988 and 1996, respectively. From 1996 to 2002, he was a Senior Research Engineer with the Institute of Communication Systems and Data Processing, RWTH Aachen University. From April 1998 to March 1999, he was a Technology Consultant at the AT&T Speech and Image Processing Services Research Lab (Shannon Labs), Florham Park, NJ. From April 2002 until October 2003, he was a Professor of Digital Signal Processing at the Technische Universität Braunschweig, Braunschweig, Germany.

Since October 2003, he has been a chaired Professor of Information Technology and Communication Acoustics at Ruhr-Universität Bochum, Bochum, Germany. From October 2007 to September 2009 he served as the Dean of the Electrical Engineering and Information Sciences Department. His research interests are signal processing for voice communication systems, hearing instruments, and human-machine interfaces. He is coauthor with P. Vary of *Digital Speech Transmission – Enhancement, Coding and Error Concealment* (Wiley, 2006) and coeditor with U. Heute and C. Antweiler of *Advances in Digital Speech Transmission* (Wiley, 2008). Rainer Martin served as an Associate Editor for the IEEE TRANSACTIONS ON AUDIO, SPEECH, AND LANGUAGE PROCESSING and is an associated member of the Audio and Acoustic Signal Processing Technical Committee of the IEEE Signal Processing Society. He is a Fellow of the IEEE.

Since 2008, Rainer Martin has been a sub-project leader in the European Integrated Project “Hearing in the Communication Society (HEARCOM, www.hearcom.eu)” and the coordinator of two European Marie Curie Initial Training Networks, “Digital Signal Processing in Audiology (AUDIS, www.audis-itn.eu)” and “Improved Communication through Applied Hearing Research (ICanHear, www.icanhear.eu)”. Both networks provided funding and research opportunities for many Ph.D. and post-doctoral students at several European partner organizations.

All are Welcome!