



UNIVERSITY
OF TRENTO - Italy

Information Engineering
and Computer Science Department

SEMINAR ANNOUNCEMENT:

Joint Iterative Channel Estimation and Data Demodulation in Doubly-Spread Underwater Fading Channels

Speaker: Christian Schlegel, Dalhousie University of Halifax (CAN)

Date: Thursday 12 July 2018

Time: 10.00 a.m.

Room: GARDA ("Fabio Ferrari" Building, Via Sommarive 5, floor +1)

Abstract:

Some communication channels exhibit rapid variations in both the frequency domain as well in time. These channels, referred to as doubly-selective, are among the most difficult communications channels to equalize effectively. We consider an underwater acoustic channel, among the most severely doubly spread channels in use, and propose a frequency-domain modulation method, similar to OFDM, which is amenable to iterative channel estimation and demodulation. We'll discuss the signaling method, iterative demodulation, and integrated Kalman-filtering-based channel estimation to achieve high data rates on this type of channel. Actual measured acoustic underwater channel data is used as the basis for our simulation results that demonstrate the applicability of the method to severely doubly-spread channels.

About the speaker:



Christian Schlegel (Fellow, IEEE) held the iCORE Chair for Digital Communications at the University of Alberta, Edmonton, AB, Canada, from 2002 to 2012. Prior to that, he held academic appointments at the University of Hawaii at Manoa (visiting), Honolulu, HI, USA, at the University of South Australia, Adelaide, SA, Australia, at the University of Texas at San Antonio, San Antonio, TX, USA, and from 1996 to 2002 at the University of Utah, Salt Lake City, UT, USA. From 2004 to 2008, he also served as a Chief Technology Officer (part-time) of Aquantia Corporation, Milpitas, CA, USA, a start-up company building 10 Gbit/s Ethernet transceivers. He is the author of *Trellis Coding* (IEEE Press, 1997), *Trellis and Turbo Coding* (Wiley, 2004, 2015), as well as *Coordinated Multiple User Communications* (Springer, 2006). He is currently an NSERC Industrial Research Chair at Dalhousie University, Halifax, NS, Canada. His research interests include reliable digital communications for complex transmission environments. He was an Associate Editor for coding theory and techniques of the IEEE TRANSACTIONS ON COMMUNICATIONS from 1999 to 2007, a Guest Editor for the PROCEEDINGS OF THE IEEE, and currently serves on the Editorial Board of Hindawi Publishing. He received a U.S. National Science Foundation Career Award in 1997 and a Canada Research Chair in 2001. He served as a Technical Program Chair of the IEEE Information Theory Workshop 2001, the IEEE International Symposium on Information Theory 2005, the Symposium on Information Theory and its Applications 2016, and as the General Chair of the 2005 IEEE Communication Theory Workshop and the 2013 IEEE Conference on Wireless On-Demand Network Systems and Services. He was named the IEEE Distinguished Lecturer in 2007 and 2011.

Contact person for this seminar: **CLAUDIO SACCHI** – claudio.sacchi@unitn.it