



THE CHINESE UNIVERSITY OF HONG KONG
 Institute of Network Coding
 and
 Department of Information Engineering
Seminar



Noisebergs in Z Gaussian Interference Channels

By

Prof. Max H. M. Costa
University of Campinas, Brazil

Date : 18 May 2011 (Wednesday)
Time : 2:30 - 3:30 pm
Venue : Room 1009, William M. W. Mong Engineering Building
The Chinese University of Hong Kong

Abstract

We propose an efficient scheme to transmit information over a Z Gaussian interference channel. The scheme uses the concept of water filling to provide optimal power sharing among orthogonal dimensions. The model under investigation is a one-sided Gaussian interference channel with interference parameter a in the range $(0,1)$, which can be recast as a degraded Gaussian interference channel. In the proposed solution, the notion of *noisebergs* (noise icebergs) arises, where noise power floats above signal power in a water filling representation of the problem, providing an improved allocation of power and degrees of freedom. The solution is best characterized by a graphical representation in the frequency domain.

Biography

Max H. M. Costa graduated as an Electrical Engineer at the University of Brasília in 1974. He received his Master Degree in Electrical Engineering from the University of Campinas (Unicamp) in 1977, the Master in Statistics from Stanford University in 1979, the Ph.D. in Electrical Engineering from Stanford University in 1983, and the “Livro Docência” in Electrical Engineering from Unicamp in 1998. He was a Researcher at the Brazilian National Institute of Space Research (INPE), in São José dos Campos, SP, Brazil, from 1983 to 1988 and at the General Electric Corporate Research and Development Center, in Schenectady, NY, USA, from 1988 to 1993. From 1993 to 1994 he was a Senior Research Associate at NASA’s Jet Propulsion Laboratory, in Pasadena, CA, USA. Since 1995 he has been a Faculty Member at Unicamp, where he is currently an Associate Professor. From April 2007 to April 2011 he was the Director of the School of Electrical and Computer Engineering (FEEC) of Unicamp. He is a Senior Member of the IEEE, and a Senior Member of the Brazilian Telecommunications Society (SBrT). He is a member of the Board of Governors (BoG) of the IEEE Information Theory Society over the period 2010-2012. He is currently a member of the Awards Committee, the Membership and Chapters Committee, and a Distinguished Lecturer of the Information Theory Society. His research interests lie in Shannon theory, source and channel coding, and digital television. His papers have received over 2500 citations. He is better known for his paper “Writing on dirty paper”, published in 1983, a recipient of close to 2000 citations according to Google Scholar.

****ALL ARE WELCOME ****

Host: Professor Raymond W.H. Yeung (Tel: 2609-8375, Email: whyeung@ie.cuhk.edu.hk)
 Enquiries: Information Engineering Dept., CUHK (Tel.: 2609-8388)