UNIVERSITY OF MACAU
FACULTY OF SCIENCE AND TECHNOLOGY
DEPARTMENT of MATHEMATICS

Painlev´e Transcendants and the Information Theory of MIMO systems

by

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Date : **29/03/2011 (Tuesday)**
Time : **15:30 – 16:30**
Venue : **WLG113**

Abstract

In this talk I will show that the moment generating function of the Shannon capacity --- essentially an entropy --- which characterizes the ultimate limits on communications achievable by any transmission scheme, is described by a particular Painlev´e V transcendant, in the single user case. In the limit of large number of antennas (transmitting and receiving), I will demonstrate how the potential theory approach (involves singular integral equation) maybe usefully employed together with this PV to systematically compute higher moments of the capacity, in a large n expansion. This shows deviation from Gaussian as the signal to noise ratio P increases.

Biography

Prof. Yang Chen is currently Professor of Mathematical Physics (Personal Chair) in the Department of Mathematics of Imperial College London.   He obtained his PhD. Degree at the University of Massachusetts, Amherst in 1987.   Prof. Yang Chen has a total number of 68 and one published on line doi:10.1016/j.jat.2010.07.005—all in refereed Journal. Number of publications between 2003 and 2010, 17, excluding conference proceedings.

ALL ARE WELCOME!