

Séminaire ICI : Arsenia Chorti

28 Février 2012, 14:00 – 15:30

Titre du séminaire

Practical Physical Layer Security Paradigms

Date et lieu

Mardi 28 février 2012.

[ENSEA](#), salle 384.

Abstract

Physical layer security has re-emerged as a focal point of research in information and communication theory due to the importance of its potential applications. Building on the pioneering works of Wyner and Csiszár and Körner, it has been demonstrated that a noisy communication channel offers opportunities for perfectly secret information exchange as long as a legitimate user has a Signal-to-Noise Ratio advantage in respect to an eavesdropper. In particular, it has been shown that in situations where the eavesdropper's channel is on average a degraded version of the main channel, a positive secrecy capacity can be guaranteed. These results have recently been extended for the wireless fading channel, Multiple- Input Multiple-Output and cooperative systems using jamming.

Nevertheless, physical layer security is still considered a primarily theoretical area as only few practical systems proposals have so far come to light. In this talk, we investigate physical layer security paradigms aiming to bridge some of the gap between theory and practice. Firstly, we explore alternatives to achieve perfect secrecy by exploiting topological and mobility asymmetries between a legitimate user and potential eavesdroppers. Then, we discuss optimal jamming interfering strategies for M-QAM and M-PSK systems. Finally, we conclude with investigating the idea of incorporating secrecy in the Quality of Service metrics of the network.

Short Bio

Dr. Arsenia Chorti, a Visiting Researcher at Princeton University in the US and Marie Curie IOF Fellow since May 2011, has served as a Senior Lecturer in Telecommunications at Middlesex University in the UK between Dec. 2008 and Apr. 2011. She obtained the M.Eng. in Electrical and Electronic Engineering from the University of Patras in Greece and the D.E.A. degree in Electronics at the Université Pierre et Marie Curie – Paris VI in France. In 2005 she obtained her Ph.D. in Signal Processing from Imperial College London. On completion of her doctoral studies she took post-doctoral positions at the University of Southampton in the UK, the Technical University of Crete in Greece and University College London in the UK, between 2005 and 2008.

