

Minutes of course at UCL, June 2008

Course on Wireless Physical Layer security

held at UCL (Louvain-la-Neuve, Belgium) on June 16 and 17th 2008.

The course has been organized by Prof. Luc Vandendorpe and was attended by 40 persons.

Speakers

H. V. Poor (Princeton, U.S.A.) and H. El Gamal (Ohio State University)

Abstract

The course aimed to :

1. introduce the basic principles of information theoretic security;
2. cover recent research advances in wireless physical layer security;
3. summarize the important contributions resulting from recent research efforts; and
4. outline the outstanding open problems in the area.

Course Outline

1. The Classical Wiretap Channel (2 hours)
 - (a) Information theoretic versus computational based secrecy (HEG)
 - (b) Shannon's model (HEG)
 - (c) Wyner's wiretap channel (HVP)
 - (d) The Csiszár-Körner broadcast channel with confidential messages (HVP)
2. Recent Advances in the Wiretap Channel (HEG: 3 hours)
 - (a) Secrecy through public discussion
 - (b) The wiretap channel with feedback
 - (c) Opportunistic secrecy
 - (d) The MIMO wiretap channel
 - (e) The relay-eavesdropper channel
 - (f) Authentication over the wiretap channel
3. Multi-User Wireless Channels with Secrecy Constraints (HVP: 3 hours)
 - (a) The broadcast channel
 - (b) The multiple access channel
 - (c) The cognitive interference channel
 - (d) Scheduling of secure broadcast
4. Concluding Remarks (HEG & HVP: 1 hour)
 - (a) Lessons learned
 - (b) Open problems

Attendance

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