



SIGNALS AND SYSTEMS IN OPTICAL FIBER COMMUNICATIONS

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Fundamental of signals and systems- part 1 **11 July – 10am (CEST)**
Fundamental of signals and systems - part 2 **12 July – 10am (CEST)**
Fundamental of Sampling theory **14 July – 10am (CEST)**
Modulation and demodulation and assignments **18 July – 10am (CEST)**
Adaptive equalizer using finite impulse response (FIR) filter **19 July – 10am (CEST)**
Compensation of carrier frequency offset (CFO) **21 July – 10am (CEST)**
Exercises **13-15-20-22 July**

Abstract:

In fiber optic communication systems, understanding digital signal processing is extremely important. Starting with the design of digital filters and adaptive equalizers, deep learning applications have recently been actively studied. Also, modulation schemes that take advantage of statistical properties are being used. Students may neglect the basics because of the wide range of knowledge you need to learn even if they do want to study the fundamental field. In this lecture, we will focus on signals and systems to relearn the definitions of continuous-time signals and discrete-time signals, and the concept of linear time-invariant (LTI) systems. We will also relearn the discrete Fourier transform (DFT) and fast Fourier transform (FFT). After those, if time permits, we will simulate the adaptive equalizers that have been used in digital coherent communication systems.

Short bio:

Daisuke Hisano (Member, IEEE) received the B.E., M.E., and Ph.D. degrees in electrical, electronic and information engineering from Osaka University, Osaka, Japan, in 2012, 2014, and 2018, respectively. In 2014, he joined NTT Access Network Service Systems Laboratories, Yokosuka, Japan. Since October 2018, he has been an Assistant Professor with Osaka University. His research interests include optical-wireless converged networks, optical communication, all-optical signal processing, visible light communication, edge computing, and application of deep learning to optical communication. He is a member of the IEICE. He was a recipient of the IEEE Kansai Section Young Professionals Award, in 2021.

Please, send a request of participation to pixnet@santannapisa.it in order to receive the link to the seminar sessions.