INSTITUTE OF COMMUNICATION, INFORMATION AND PERCEPTION TECHNOLOGIES

Sant'Anna School of Advanced Studies – Pisa

PIXNET

FEC AND CONSTELLATION SHAPING FOR OPTICAL COMMUNICATIONS

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"Information theory and optical fibre transmission" **5 July – 10 a.m.**

"Fundamentals of forward error correction codes" **6 July – 10 a.m.**

"Forward error correction schemes for optical communication systems" **8 July – 10 a.m.**

"Constellation shaping for the optical fibre channel" **9 July – 10 a.m.**

Abstract:

Optical fibres are of paramount importance in today's global telecommunication infrastructure. However, as fibre transmission resources, once deemed virtually unlimited, are approaching exhaustion, digital techniques able to make an efficient use of such resources represent today a hot topic of research. In particular, advanced forward error correction (FEC) codes and constellation shaping are central to maximising information rates of fibre transmission.

This course will offer an overview of the most popular FEC and shaping techniques adopted in modern optical communication systems. Both the principles and the performance of such schemes will be analysed in the context of real-world fibre systems. The course will also provide the information-theoretical foundations underpinning FEC and shaping techniques.

Short bio:

Gabriele Liga received a Telecommunications Engineering B.Sc. degree from Universita' degli Studi di Palermo, Italy in 2005, and a Telecommunications Engineering M.Sc. degree from Politecnico di Milano, Italy in 2011. In 2017, he obtained a Ph.D. degree in optical communications in the Optical Networks Group (ONG), University College London, UK. From 2017 to 2018 he worked as a postdoctoral researcher in ONG, focussing on digital signal processing and nonlinearity compensation for optical fibre transmission.
Since 2018 he has been a Marie Curie research fellow with the Information and Communication Theory Laboratory (Signal Processing Systems Group), at the Eindhoven University of Technology in The Netherlands working on channel modelling, channel coding and signal shaping for optical fibre communications.

Please, send a request of participation to pixnet@santannapisa.it in order to book your place in the seminar sessions.

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Seminars will be held within the framework of the Photonic Integrated Circuits, Sensors and Networks (PIXNET) Erasmus Mundus Joint Master Degree