ICFO

SEMINAR: Demultiplexing Generalized Information via Quantum Transmission Lines

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15:00 to 15:30
Seminar Room

Demultiplexers are the fundamental primitives of network architecture, enabling perfect routing of an input classical signal to a designated one, among multiple output ports. Quantum transmission lines, having access to the quantum systems directly, are able to transmit both the classical and quantum information encoded in quantum systems. A natural question therefore emerges that whether the scrambled classical and quantum information in a quantum system can be perfectly demultiplexed in the designated classical and quantum output ports? In this talk, I will first answer this question by introducing a quantum to quantum-classical device, namely the quantum demultiplexer (Q-DEMUX). Then I will characterize the class of Q-DEMUXs enabling perfect routing of both the classical and the quantum information along with their simple circuit realizations. A stronger variant of Q-DEMUXs will also be discussed, where the sender is oblivious regarding the nature of the data to be transmitted. Finally, I will conclude by highlighting an explicit connection between the strength of a Q-DEMUX with the incompatibility of quantum instruments.

Hosted by: Prof. Dr. Antonio Acin