Seminar Announcement

Talk

Noiseless clusters in complex quantum networks

Albert Cabot (IFISC)

IFISC Seminar Room

Friday, September 14, 2018 at 12:00

The transport and storage of quantum information, excitations and entanglement, within and across extended quantum systems is crucially affected by the presence of noise induced by their surroundings. Generally, the interaction with the environment deteriorates quantum properties initially present, thus limiting the efficiency of any quantum-enhanced protocol or phenomenon of key relevance, for instance, in the design of quantum communication networks. Here we consider random and small-world networks, in which the nodes are quantum harmonic oscillators and the edges are interactions amongst them. These quantum networks are embedded into a correlated environment which induces collective dissipation and decoherence. We show that these systems can hold noiseless structures, i.e., parts of the system effectively shielded from the environment, in which quantum coherences can survive indefinitely. We characterize these noiseless structures in connection to the network topology, addressing their abundance, extension and configuration, as well as their robustness to disorder and experimental imperfections.

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TV

This seminar will be broadcasted live in:
http://ifisc.uib-csic.es/live.php