ID de Contribution: **10** Type: **Non spécifié**

Mazyar Mirrahimi: Dissipation as a resource for stabilizing quantum states with superconducting qubits

mercredi 7 juin 2017 12:00 (1 heure)

Recent advances in quantum-limited amplification have opened doors to high-fidelity non-demolition measurement of superconducting qubits and have already led to successful experiments on closed-loop control of such systems. However, the finite bandwidth of the amplification procedure, together with the time-consuming data acquisition and post-treatment of the output signal, lead to important latency in the feedback procedure. Alternatively, the reservoir (dissipation) engineering circumvent the necessity of a real-time data acquisition, signal processing and feedback calculation. Coupling the quantum system to be stabilized to a strongly dissipative ancillary quantum system allows us to evacuate the entropy of the main system through the dissipation of the ancillary one. I will overview some theoretical proposals as well as the related experiments through the past few years illustrating the power of such autonomous feedback schemes for stabilizing highly non-classical states as well as for quantum error correction.