

OpenQMBP2023: New perspectives in the out-of-equilibrium dynamics of open many-body quantum systems



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Inelastic Cooper pair tunneling in the strongly interacting regime

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Superconducting circuits have recently emerged as a new platform to explore the physics of open many body systems using microwave photons in strongly non-linear media. In this talk, we will present some experimental results that were obtained in Orsay and in Grenoble where photons confined in a waveguide interact strongly through an impurity, here a Josephson junction. The system may be driven by applying a dc voltage across the junction. At finite voltages, Cooper pairs tunnel and relax their energy by emitting photons in the waveguide. Such system may be modeled by a driven boundary Sine Gordon problem. We will present some preliminary theoretical results to initiate the discussion.

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