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Suppression of the relaxation induced by radioactivity in superconducting qubits and Kinetic Inductance Detectors

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Non-equilibrium quasiparticles can deteriorate the performance of superconducting qubits and Kinetic Inductance Detectors. The former suffer from the loss of coherence, while the latter from low-frequency noise. We are investigating a source of quasiparticles that has been too long neglected, namely radioactivity: cosmic rays, environmental radioactivity, and contaminants in the materials can all generate phonons of energy sufficient to break Cooper pairs and thus increase the number of quasiparticles. In this contribution we describe the status of the project and its perspectives.

Less than 5 years of experience since completion of Ph.D

Y

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