

Low Radioactivity Techniques (LRT2022)



Contribution ID: 71

Type: **Oral Presentation**

The Interplay of Radioactivity and Quantum Science

Wednesday, June 15, 2022 10:30 AM (20 minutes)

The presence of nonequilibrium quasiparticles (QPs) hinders the performance of superconducting qubits. This excess of nonequilibrium quasiparticles arise mainly from two primary sources: in the infrared photons that couple to qubits via photon-assisted quasiparticle generation, and the impact events in which ionizing radiation deposits large amounts of energy (keV) onto the qubit chip. The latter results in spatiotemporally-correlated errors that challenge quantum error correction schemes. My talk will review the current knowledge status of the effect of ionizing radiation on qubit coherence, and how various methods (from on-chip mitigation to underground shielding) can be used to help mitigate the obstacles imposed by such radiation.

Primary author: FORMAGGIO, Joseph

Presenter: FORMAGGIO, Joseph

Session Classification: LRT 2022 - presentations

Track Classification: Particle background impacts on quantum information systems and quantum computing