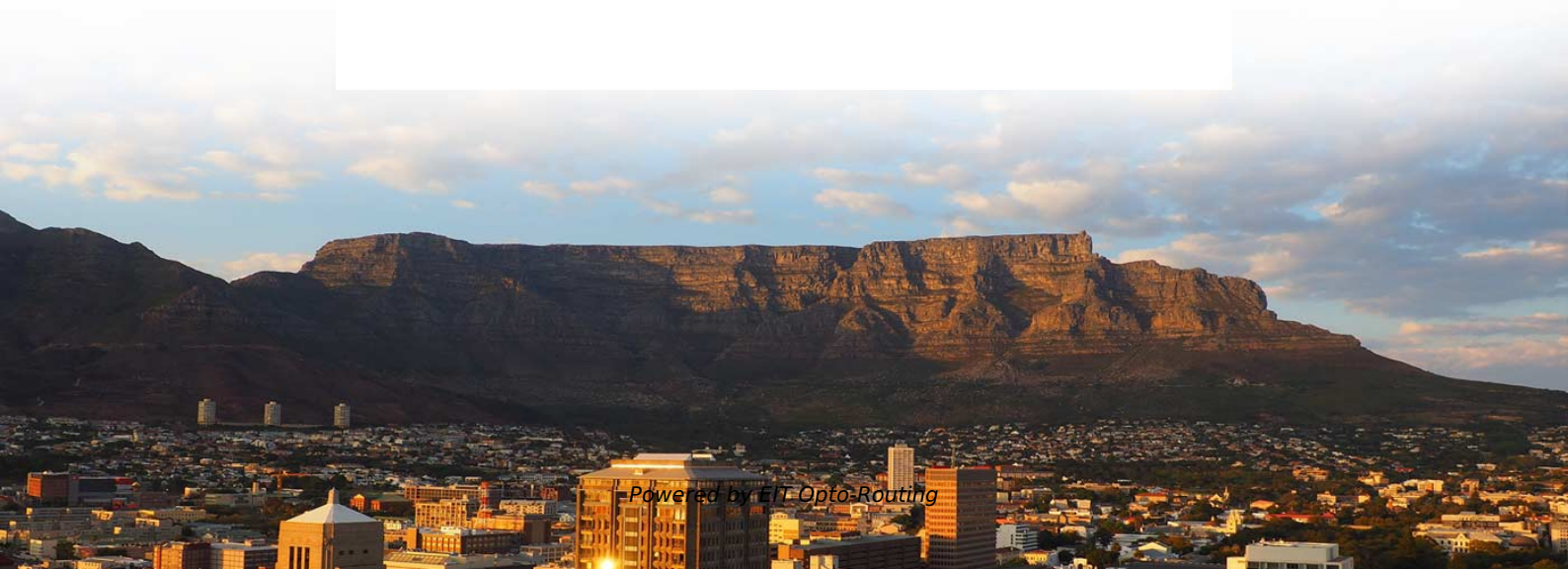
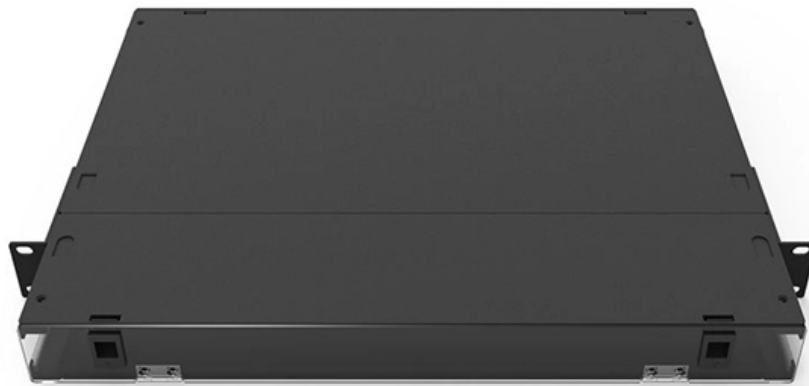


Belarusian quantum communication junction box with low loss





Overview

The invention introduces a method for fabricating low-loss niobium Josephson junctions which enhance quantum device performance by using niobium superconductors that are separated by an aluminum oxide barrier and are encapsulated with aluminum layers to prevent chemical. However, progress in Josephson junction-based quantum technologies is facing the ongoing challenge of minimizing loss channels. This is also true for parametric superconducting devices based on nonlinear Josephson resonators. This approach enables low-temperature spectroscopy measurements without the need for external RF electronics, a crucial step for advancing quantum technologies. Superconducting qubits are commonly realized using Al/AlO_x/Al Josephson junctions operating in the tunneling regime, where even minor variations in device geometry can lead to substantial performance fluctuations.



Belarusian quantum communication junction box with low loss

arXiv:2410.23947v1 [quant-ph] 31 Oct 2024

arXiv:2410.23947v1 [quant-ph] 31 Oct 2024 Approaching energy quantum limit detection of microwave photons with Josephson Junctions

Publication in Communications Physics: DC-operated

This approach enables low-temperature spectroscopy measurements without the need for external RF electronics, a crucial step for advancing



Fabrication of low-loss Josephson parametric devices

Potential applications include scalable quantum computing, microwave quantum networks, and quantum-limited amplifiers. However, progress in Josephson junction-based quantum

Quantum Communication Solutions , Ultra-Low Loss

Quantum communications systems rely on transmitting delicate quantum states--such as entangled photons--over optical fibers. Unlike

(PDF) Ultra-shallow junction electrodes in low-loss

Quantum computation requires qubits that can be coupled and realized in a scalable manner, together with universal and high-fidelity one- and



Implementation and Experimental Verification of Smart Junction Box

Implementation and Experimental Verification of Smart Junction Box for Low-Voltage Automotive Electronics in Electric Vehicles

Low Loss Ferrite Y-Junction Circulator Based on Empty Substrate

The experimental results confirm the results obtained by the full wave simulations: insertion loss better than dB isolation and return loss below dB from 10 to 14 GHz. -1 -10
INDEX TERMS Empty

arXiv:cond-mat/0011269v1 [cond-mat.mes-hall] 15



Nov 2000

Here we review the quantum properties of low-capacitance Josephson junction devices. The relevant quantum degrees of freedom are either Cooper pair charges on small islands or fluxes in ring

Prospects for Developing Subcarrier Wave Quantum Communication

We present the results of using a domestically produced component base for the creation of subcarrier wave quantum communication systems. It is shown that

Low-loss Niobium Josephson Junctions That Improve

The invention introduces a method for fabricating low-loss niobium Josephson junctions which enhance quantum device performance by using niobium



Quantum WDM Box

The high-density, low-loss Multi-Channel Mux Demux features an integrated optical circulator and is designed for long-haul transmission in passive DWDM networks.

Quantum communication over bandwidth-and-time-limited channels

In this paper, we study quantum communication in BTL pure-loss channels. The optimal strategy is to find proper input modes such that the corresponding output mode profiles are mutually orthogonal,

Large-scale quantum communication networks with integrated



Combining mass-manufacturability, cost-effectiveness and high scalability of integrated photonics with long-distance quantum communication represents a viable path to large-scale

Secure Communication via Quantum Channels

It is therefore particularly important to bring together the scientists from the different fields that are relevant to quantum technologies in order to advance the progress of the joint work. Our conference will be an

Timing and synchronisation for high-loss free-space quantum

Satellite-based, long-distance free-space quantum key distribution has the potential to realise global quantum secure communication networks. Detecting faint quantum optical pulses sent



Low-loss interconnects for modular superconducting quantum

Here we report low-loss interconnects based on pure aluminium coaxial cables and on-chip impedance transformers featuring quality factors of up to 8.1×10^5 , which is comparable with the

The superconducting quasicharge qubit

The low-energy excitations of Blochium are anharmonic vibrations of quasicharge through the small junction, the spectrum of which is the focus of our

Center of Quantum Optics and Quantum Information



The center is a main organizer of International Conference of Quantum Optics and Information (ICQOQI), which has been organized since 1986.

Micius Satellite Enables Intercontinental Quantum

Researchers perform decoy-state quantum key distribution between a low-Earth-orbit satellite and multiple ground stations located in Xinglong,

Device variability of Josephson junctions induced by interface roughness

Superconducting circuits are among the most promising platforms for scalable quantum computing, combining litho-graphic manufacturability with strong, low-loss nonlinearity from the



Ultrafast and Fault-Tolerant Quantum Communication across Long

Establishing quantum repeater (QR) stations based on entanglement distribution is the only currently known approach to long-distance quantum communication using conventional optical

Noiseless Loss Suppression in Quantum Optical Communication

However, the distance over which quantum states of light can be distributed without significant disturbance is limited due to un-avoidable losses and noise in optical links.

arXiv:2412.11280v3 [quant-ph] 5 May 2025

based on nonlinear Josephson resonators. In this work, we report on the fabrication and



characterization of low-loss Josephson parametric devices operated in the GHz frequency range,

Quasiparticle tunneling as a probe of Josephson junction

Non-equilibrium quasiparticles are possible sources for decoherence in superconducting qubits because they can lead to energy decay or dephasing upon tunneling across Josephson

Aluminum-based low-loss interconnects for superconducting quantum

Other than quantum interconnection applications, it's rare to find scenarios where a pure aluminum coaxial cable is needed." To create his new low-loss interconnects, Zhong custom ordered pure



Low-loss Niobium Josephson Junctions That Improve

There are numerous publications and patents detailing various fabrication methods of niobium Josephson junctions, but these processes typically target larger

Fabrication of low-loss Josephson parametric devices

They allow for a reduction of both the amount of loss channels and their coupling to the critical components of superconducting quantum circuits. However, consistently achieving low

Micius quantum experiments in space , Rev. Mod. Phys.



The Micius satellite, launched from China in August 2016, is the first and only satellite dedicated entirely to quantum experiments. The ultralow loss

Fabrication of low-loss Josephson parametric devices

In this work, we report on the fabrication and characterization of low-loss Josephson parametric devices operated in the GHz frequency range, showing record internal quality factors.

Quantum Communication 101

In its near-term roadmap, SCaN is working towards a user facility that will enable quantum communication between satellites in low-Earth orbit and ground stations: a quantum testbed.



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<https://www.entrenamientointeligente.es>