

Technical seminar

Traveling-wave parametric amplifiers: myths and realities

Speaker: Dr. Maxime Malnou (Advanced Microwave Photonics, NIST)

Abstract

Microwave parametric amplifiers are ubiquitous in the readout of superconducting circuits, notably superconducting qubits used in quantum computers. As the first amplification stage in a readout chain, this kind of amplifier must have performances as close to ideal as possible. Over the past few years, traveling-wave parametric amplifiers (TWPAs) have emerged as an interesting platform, able to provide decade-wide amplification bandwidth at a reasonable gain and power handling. However, the scientific community still struggles with delivering a fair characterization of the noise performance of such amplifiers, and furthermore the TWPAs backward gain remains an issue. In this talk, Dr. Maxime Malnou will present the challenges that go along with performing a meaningful noise measurement of an amplification chain whose first amplifier is a TWPA, and he will present a possible avenue to provide backward isolation, in addition to forward amplification within the same device. Finally, he will discuss how the synthesis of traveling-wave structures can be a powerful tool for quantum information experiments.

Date: 27/09/2023

At 02:30 pm

Campus INRiM, Strada delle Cacce 91, Torino
Meeting Room - Building D, First Floor

GMeet: <https://meet.google.com/dwq-dmkh-mgi>