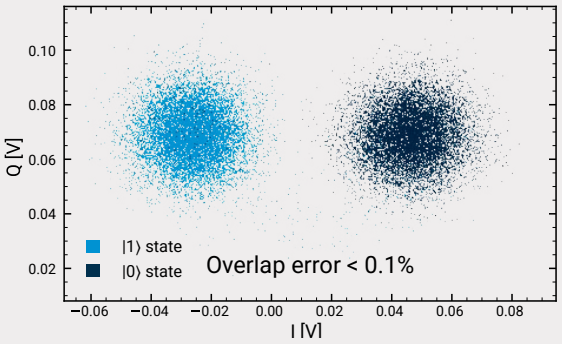
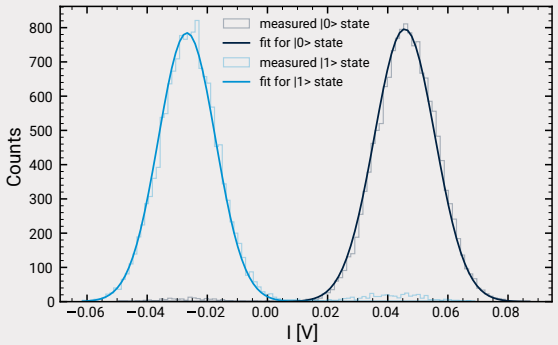
QUBIT MEASUREMENT
WITH TWPA

IQ DISTRIBUTION





Courtesy of U. Goldblatt from the Rosenblum Lab at the Weizmann Institute of Science.

SERVICES

- **Warranty**: all devices come with a one-year off-site warranty.
- **Pre-study**: assessment of the measurement setup.
- **After sales**: 10h of remote assistance to help with the installation and setup of the TWPA.

PUBLICATIONS

- Planat et al., Phys. Rev. X 10, 021021 (2020)
- Ranadive et al., Nat. Com. 13, 1737 (2022)
- Esposito et al., Phys. Rev. Lett. 128, 153603 (2022)
- Esposito et al., Appl. Phys. Lett. 119, 120501 (2021)

A NEW GENERATION OF AMPLIFIERS ENABLING ULTRA-LOW NOISE MICROWAVE READOUT

We specialize in developing and manufacturing state-of-the-art quantum hardware using superconducting circuits for readout applications. Our products are the result of years of intensive research. Currently, we focus on the development of Josephson Traveling-Wave Parametric Amplifiers (JTWPA) for high-fidelity multiplexed qubit readout.

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SILENT WAVES

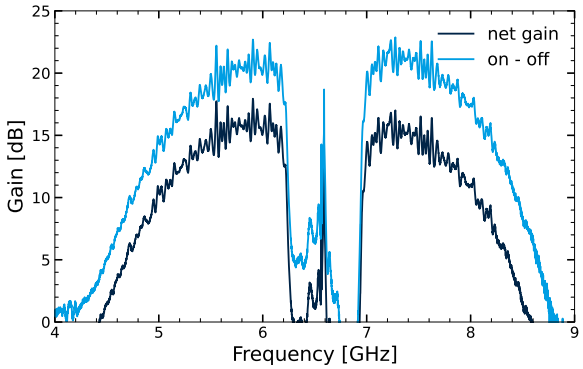
THE ARGO

PHOTONIC CRYSTAL
TRAVELING WAVE
PARAMETRIC AMPLIFIER

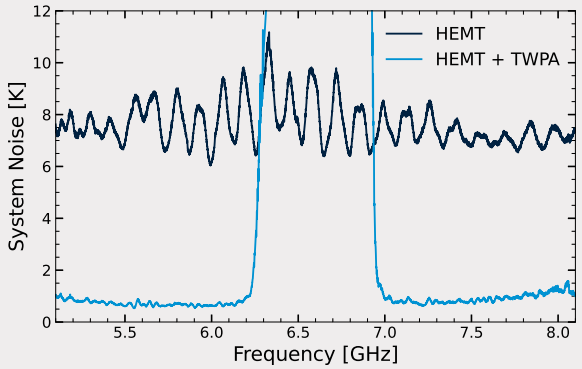
THE ARGO

The Argo is our very first traveling-wave parametric amplifier. Designed with user-friendliness in mind, effortless installation, and immunity to flux noise, it is the perfect fit for a high-fidelity single-shot qubit readout that does not require complex changes to your experimental set-up.

GAIN FIGURE



TOTAL SYSTEM NOISE



THE PRODUCT

- SMA compatible connectors
- 50 Ω matched
- Plug & play
- Low pump power
- Flux insensitive
- No magnetic bias

FIGURES OF MERIT

Max net gain
>15 dB

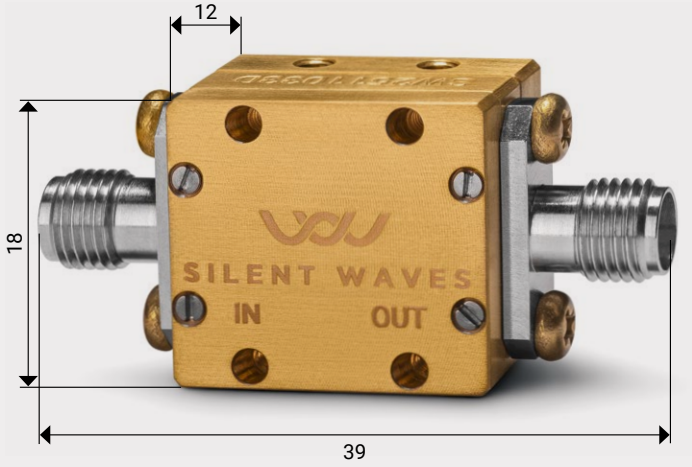
Bandwidth
2 GHz

Saturation power
-100 dBm
(at 20 dB)

Added noise
~ 1.5 SQL
(standard quantum limit)

The amplifier is powered by a microwave source and does not require DC biasing.

In order to achieve high-gain across a bandwidth exceeding 2 GHz, phase-matching between the pump, the signal and the idler is required. To satisfy this condition, we introduce a feature in the dispersion relation — a photonic gap engineered by spatially modulating the Josephson junctions.



CUSTOMIZABLE

Standard gap frequency position between 6 and 7 GHz.

Gap frequency position is customizable upon request between 4 and 8 GHz.

CHARACTERIZATION

Full characterization performed at 20 mK.

Report of the characterization sent before shipment of the product.

SATURATION CURVES