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Improving dielectric losses in the design of 50 Ohm travelling wave parametric amplifiers

Institute Neel has developed a new state of art fabrication technique of squid line TWPA (travelling wave parametric amplifiers). This method matches the amplifier's impedance to 50 Ohm while maintaining 20 dB amplification gain and a bandwidth of 3 GHz.

The fabrication requires the deposition of a thin layer of dielectric material.

We study and characterize the losses in the dielectric layer for different materials to reduce the losses and enhance the amplifier performance.