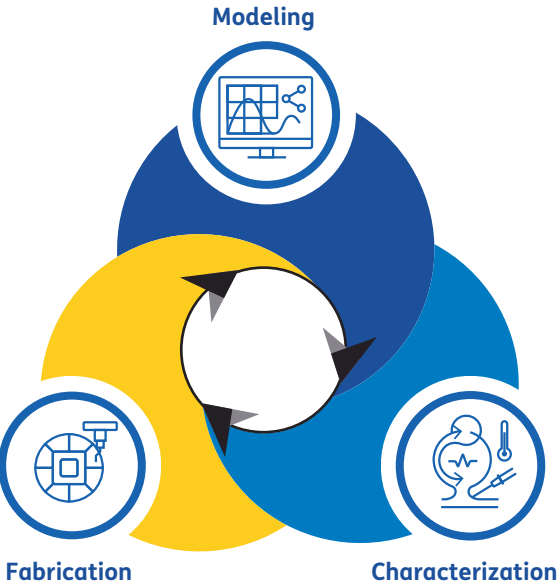


Feedback-driven development



By cycling through the core pillars of **Modeling**, **Fabrication** and **Characterization**, we cultivate deep knowledge and deliver results that drive every project forward.



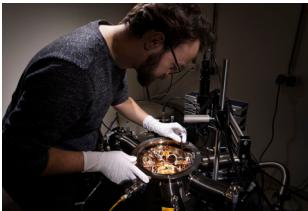
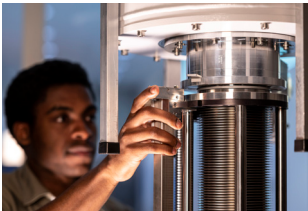
Modeling: We simulate our devices to predict their performance and optimize every design before fabrication.



Fabrication: Device manufacturing is carried out in the cleanrooms of the Van Leeuwenhoek Laboratory (VLL) or Else Kooi Laboratory (EKL) to bring cutting-edge superconducting devices to life.



Characterization: At TNO, we utilize our Quantum Information Technology Test (QITT) facility to thoroughly characterize each device and assess superconducting performance.



Contact

For any inquiries or further information, please feel free to contact us via the email below or by scanning the QR code.

✉ superconducting_dev@tno.nl



Digital

Quantum technology

Superconducting tech support – from idea to implementation

TNO innovation for life



TNO (Netherlands Organisation for Applied Scientific Research) is an independent research institute that bridges the gap between academia and industry.

Quantum Technology at TNO

TNO's Quantum Technology (QT) department plays a vital role in the Dutch quantum ecosystem. Established in 2018, enhancing the QuTech collaboration between TNO and TU-Delft, the department has grown from supporting academic research to driving innovation in the quantum industry. Today, the QT department operates independently, focusing on the development of diverse quantum systems-including superconducting quantum devices, quantum computing, quantum internet technologies and quantum sensing.

Project Organisation at TNO

TNO offers a secure and collaborative environment for high-tech innovation. Activities are structured in projects with clear confidentiality agreements, data protection and tailored IP arrangements to achieve goals within the associated budgets and timelines. By combining our deep knowledge in quantum technologies with in-house expertise in nanofabrication, optics, and optomechanics, TNO assembles multidisciplinary teams that accelerate development and deliver integrated, customized solutions.

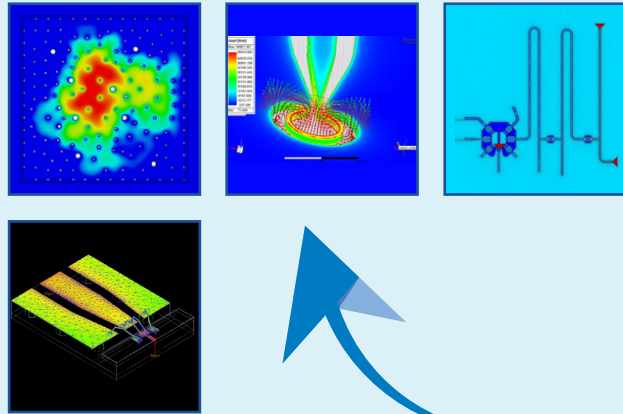
Modeling

FEM simulation expertise:

- Ansys HFSS (stand-alone and with Qiskit Metal)
- PathWave ADS
- CST Studio Suite

Josephson-Junction simulation software:

- Inductex (Circuit Parameter Extraction)
- JoSim (Analogue Circuit Simulator)

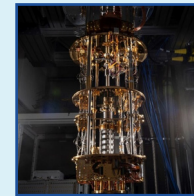


Characterization

Our QITT facility has two Bluefors dilution fridges (T~10s mK) with 1-axis 2T magnet, a 1K ICE Oxford fridge, and a cryo and room temperature probe stations.

Superconducting measurement expertise:

- S-parameter measurements (option: cryogenic SOLT calibration)
- Thermal/quantum noise measurements (option: with a reference noise source)
- Transmon qubit diagnoses: Transition frequency, T1, T2*, T2echo
- Characterization of up to 20 individually-driven transmons
- Flux-controlled CZ gate for nearest-neighbor pairs
- Measurements with a parametric amplifier



Fabrication

Experience with: **Characterization tools** (AFM, SEM, EDX spectroscopy, Raman and PL spectroscopy, ellipsometry, XPS and XRD) **Etching**, (dry and wet), **Deposition** (PVD, CVD, PECVD, ALD), and **Lithography** (optical and electron beam)

