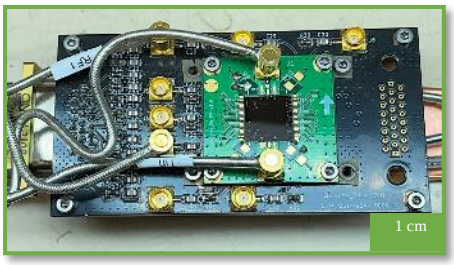
Institut de Recherche Interdisciplinaire de Grenoble

Pheliqs Quantum Physics & Engineering

Master /PhD thesis Project

Microwave resonators on Germanium HeteroStructures



Wired sample before cryogenic cooling

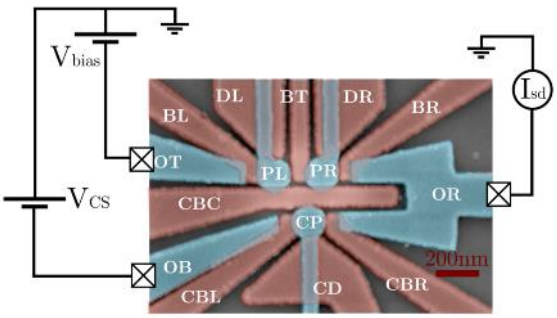
Quantum computing (QC) is currently pushing further the frontier of information technology. Among other fields, solid-state spin qubits and superconducting qubits are promising research areas for QC[1]. Recently our laboratory has developed a new platform for quantum devices based on heterostructures embedding a high mobility hole quantum well. These quantum devices are on one-side Quantum dots, which can host future spin qubits, and on the other side Josephson junctions, which can be at the heart of future superconducting qubits. To further develop this platform we are currently developing microwave-superconducting circuit on this platform to allow future high frequency experiments. In that prospect, we are looking for a talented and motivated Master Student to fabricate and measure microwave resonators on Germanium HeteroStructures.

During the master project, you will collaborate on a daily basis with a lively team of three permanent researchers with two PostDocs and two PhDs and take part of an exciting adventure to bring microwave photons available for germanium quantum dots and germanium Josephson junction. You will participate to the development of the samples that includes design, theory and nano-fabrication done in our cleanroom facility. You will also learn to cool down samples to reach cryogenic temperatures. Finally, you will perform RF measurements in these cryogenic environments using state-of-the-art RF setups down to 10mK. Your experimental results will be discussed and understood via theory models as well. This master project is expected to continue as a PhD thesis.

[1] The germanium quantum information route, Scappucci, G. et al. Nat Rev Mater 6, 926–943 (2021)

APPLY NOW!

To apply for this position, send your application (including CV) by e-mail to: vivien.schmitt@cea.fr & silvano.defranceschi@cea.fr



Two-qubit device in Germanium

French Commission for Atomic Energy and Alternative Energies
Interdisciplinary Research Institute of Grenoble
Quantum Photonics, Electronics and Engineering Laboratory
17 av. des Martyrs – 38054 Grenoble cedex 9 – France