INTERNSHIP PROPOSAL

Laboratory name: SPEC
CNRS identification code: UMR3680
Internship director's surname: Girit
e-mail: caglar.girit@cnrs.fr Phone number:
Web page: https://iramis.cea.fr/en/spec/gq/, https://cog.cnrs.fr/
Internship location: Saclay, https://maps.app.goo.gl/EgVFtagD22r6Vyzk7

Thesis possibility after internship: YES
Funding: YES If YES, which type of funding: ANR Voltangle

Resistively shunted Josephson junctions in the quantum regime

A Josephson junction is a non-linear superconducting device. Under certain conditions the junction behaves quantum mechanically (Nobel Prize in Physics, 2025), and is strongly influenced by the electrical circuit in which it is embedded. The student will measure DC electronic properties of Josephson junctions in the quantum regime. Preliminary data indicates that a large bias resistor can make the junction insulating instead of superconducting. The goal of the internship is to determine the phase diagram for this transition as a function of the junction size.

Please, indicate which speciality(ies) seem(s) to be more adapted to the subject:

Condensed Matter Physics: YES/NO Soft Matter and Biological Physics: YES/NO
Quantum Physics: YES/NO Theoretical Physics: YES/NO