Five-year chair in experimental solid-state physics with a focus on semiconductor spin qubits coupled to microwave photons

Job description

The Quantum Photonics, Electronics and Engineering Laboratory (PHELIQS, https://www.pheliqs.fr/en), a joint research unit of the CEA Fundamental Research Division in Grenoble (CEA-IRIG) and Université Grenoble Alpes (UGA), is opening a 5-year chair position in experimental solid-state physics with a focus on semiconductor hole-spin qubits coupled to microwave photons.
Within PHELIQS, the LaTEQS team (https://www.lateqs.fr/) is currently developing a large panel of experimental approaches to quantum technologies, including hole-spin qubits in silicon and germanium. In this context, the successful candidate is expected to establish and lead a focused research effort on circuit quantum electrodynamics with hole spin-qubits. A single microwave photon in a superconducting cavity can act as quantum bus enabling long-distance entanglement between spin qubits. Therefore, the quantum mechanical interaction between spins and microwave photons may play a key role in the development of scalable spin-qubit architectures.
This research topic is part of the ambitious PRESQUILE project funded by the French "Plan quantique", in which PHELIQS is deeply involved thanks to its expertise in silicon device technology, cryoelectronics, cryogenics, and nanofabrication at the Upstream Technological Platform (PTA). The successful candidate is expected to develop her/his own project in close synergy with the LaTEQS team, establish and manage research collaborations with academic and industrial partners, including other groups within CEA and outside. The candidate is expected to supervise the research activity of students and post-docs. Strong team spirit and leadership attitude are therefore required. The PRESQUILE grant will support the personnel and running costs associated to the chair.

Located in the French Alps and surrounded by a stunning natural environment, the international city of Grenoble hosts a rich scientific ecosystem formed by public research organizations (CEA, CNRS), Université Grenoble Alpes (UGA), Large Scale European Infrastructures (ESRF, ILL), and high-tech companies. Université Grenoble Alpes attracts a large number of students in a broad range of disciplines, including quantum technologies through its recently created Federation QuantAlps.

CEA is a French public research organization that stands at the crossroad between fundamental and applied research. PHELIQS is one of the 10 laboratories of the CEA Interdisciplinary Research Institute of Grenoble (CEA-IRIG), which gathers 1200 people in the fields of physics, chemistry, biology, health, and cryotechnologies.

Qualifications:
Applicants should own a PhD in physics and have a postdoctoral research experience. We require strong experimental skills and, more specifically, a solid expertise in the fabrication and measurement of semiconductor nano-electronic devices and microwave circuitry for circuit QED. Applicants are expected to hold an outstanding record of research achievements in internationally recognized scientific environments.

How to apply:
Applications including a CV and a cover letter should be sent to romain.maurand@cea.fr no later than December 5st, 2022. In their cover letter, candidates should provide a short description of their main research achievements and scientific interests related to this open position. In addition, each candidate should arrange for three letters of recommendation to be sent to the same address.
For additional information, candidates are encouraged to contact Silvano De Franceschi (silvano.defranceschi@cea.fr).