

As a flagship research center in nanoscience and nanotechnology, our mission is to open and explore new frontiers of knowledge at the nanoscale, and bring value to society in the form of new understanding, capabilities and innovation, while inspiring and providing broad training to the next generations of researchers. Our values are Commitment, Collaboration and Transformation.

Our research lines focus on the newly-discovered physical and chemical properties that arise from the behaviour of matter at the nanoscale. ICN2 has been awarded with the Severo Ochoa Center of Excellence distinction for three consecutive periods (2014-2018 and 2018-2022 and 2023-2026). ICN2 comprises 19 Research Groups, 7 Technical Development and Support Units and Facilities, and 2 Research Platforms, covering different areas of nanoscience and nanotechnology.

Job Title: Postdoctoral Fellowship in Hybrid Quantum Devices and Transduction

Research area or group: Physics and Engineering of Nanodevices Group

Description of Group/Project: The Physics and Engineering of Nanodevices Group develops innovative devices to probe nanoscale material properties, integrating advanced lithographic, chemical, magnetic, and electrical transport techniques. As part of this work, the group is participating in a leading international collaboration focused on hybrid photon–phonon–magnon systems, a key area in quantum information science. The research aims to develop robust quantum transduction protocols that facilitate seamless information transfer between different physical carriers. By taking advantage of engineered yttrium iron garnet (YIG) microstructures, the project explores new regimes of coherent information transfer, building on recent breakthroughs in cavity magnomechanics.

Main Tasks and responsibilities:

- Collaborate with MIT researchers to design and characterize optimized superconducting microwave resonators tailored for hybrid quantum experiments.
- Perform precision measurements in dilution refrigerators at ICN2 and/or MIT, probing the coupling dynamics among microwave photon, phonon, and magnon modes.
- Characterize and maximize the interaction between selected hybrid magnon-phonon and photon modes in YIG microstructures, ensuring coherent signal conversion across different frequency regimes.
- Work within a dynamic team to troubleshoot experimental challenges and contribute to publications in high-impact scientific journals.

Requirements:

- A PhD in Physics, Materials Science, Nanotechnology, Electrical Engineering, or a closely related field at the time of appointment.
- Demonstrated experimental expertise and a proven track record of tackling challenging research problems.
- Excellent communication skills in English and a strong motivation to engage in interdisciplinary, collaborative research.
- A passion for advancing quantum technologies and a readiness to work in an international research environment.
- Knowledge on superconducting circuits and RF resonators will be highly valued.

- Prior experience with quantum transduction or interfacing different quantum platforms (e.g., superconducting circuits, photonics, and spin systems) is a plus.

Summary of conditions:

- Full time work (37,5h/week)
- Contract Length: Two years with possibility of an extension (subject to funding availability)
- Location: Bellaterra (Barcelona)
- Salary will depend on qualifications and demonstrated experience.
- Support to the relocation issues.
- Life Insurance.
- Work-Life Balance and Flexibility with flexible work schedules
- 28 holidays per year
- Flexible compensation plan: tax advantages contracting some products (health insurance, childcare, training, among others.)
- Training activities: languages, mentoring programme, wellbeing programme.
- International environment

Estimated Incorporation date: April – September 2025

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How to apply:

All applications must be made via the ICN2 website and include the following:

1. A cover letter.
2. A full CV including contact details.
3. 2 Reference letters or referee contacts.

Deadline for applications: N/A, applications will be continuously reviewed.

Equal opportunities:

ICN2 is an equal opportunity employer committed to diversity and inclusion of people with disabilities.

ICN2 is following the procedure for contract of people with disabilities according with article 59 of the Royal Decree 1/2015, of 30 of October.