

Postdoctoral Research Opportunity

Low-Temperature & Non-Equilibrium Superconducting Physics

King Fahd University of Petroleum & Minerals (KFUPM), Saudi Arabia

We are seeking a highly motivated Postdoctoral Research Fellow to join our research at KFUPM. The position will explore the fundamental physics of superconducting nanowires driven far from equilibrium, with the goal of translating these phenomena into next-generation technologies for single-photon detection and superconducting neuromorphic computing.

Research Focus

A central objective is to understand how microscopic processes such as hotspot formation and phase slips govern transitions between superconducting and resistive states, and how these mechanisms can be engineered for advanced photon-detection and neuromorphic functionalities.

- Non-equilibrium phenomena in superconducting nanowires
- Hotspot formation, dynamics, and relaxation
- Phase-slip mechanisms and switching processes
- Low-temperature electrical transport in superconducting nanostructures
- Superconducting nanowire single-photon detection
- Superconducting nanowire devices for neuromorphic computing

Candidate Profile

- Applicants should hold a recent PhD in Physics, Applied Physics, Electrical Engineering, or a closely related discipline.
- Candidates with backgrounds in low-temperature physics, superconductivity, superconducting nanodevices, nanofabrication, electrical transport measurements, SNSPDs, or non-equilibrium physics are particularly encouraged to apply.

Fellowship & Benefits

- Competitive salary
- Research funding and support
- Medical health insurance
- Housing and relocation support
- Access to advanced research infrastructure and state-of-the-art facilities

Program details: <https://ri.kfupm.edu.sa/join-us/postdoctoral-research-fellowship-program>

I will be attending the ASC Conference and would be happy to meet prospective candidates in person to discuss the position, our research activities, and potential research directions. If you are attending ASC and are interested in non-equilibrium superconductivity, superconducting nanowires, SNSPDs, or superconducting neuromorphic devices, please feel free to reach out and arrange a meeting during the conference.

Prof. Khalil Harrabi

King Fahd University of Petroleum & Minerals (KFUPM)

Email: harrabi@kfupm.edu.sa

We welcome applications from researchers interested in pushing the boundaries of non-equilibrium superconductivity and developing superconducting nanowire technologies at the intersection of quantum sensing, single-photon detection, and neuromorphic computing.