Basel Precision Instruments

Secondments Opportunities at Basel Precision Instruments GmbH

where cutting-edge science meets innovation and entrepreneurship

Basel Precision Instrument GmbH (BASPI) offers high-end, ultra-low noise and ultra-stable electronics for quantum research. A spin-off of the physics department, BASPI is located at the university campus in Basel. Our team of low-noise electronic experts works closely with the quantum and low-temperature research groups here in the house. With a dynamic local environment and a customer base of over 100 research labs worldwide, BASPI offers an exciting opportunity for you to get a taste of the world of high-tech start-ups and SMEs.

Location: City of Basel in Switzerland; University campus.
Secondment duration: 3 to 6 months, but can be flexible.
For more information or to apply: contact us at info@baspi.ch
Application material: resume and a short motivation letter.

Basel Precision Instruments GmbH, Klingelbergstrasse 82, 4056 Basel, Switzerland, info@baspi.ch, http://baspi.ch

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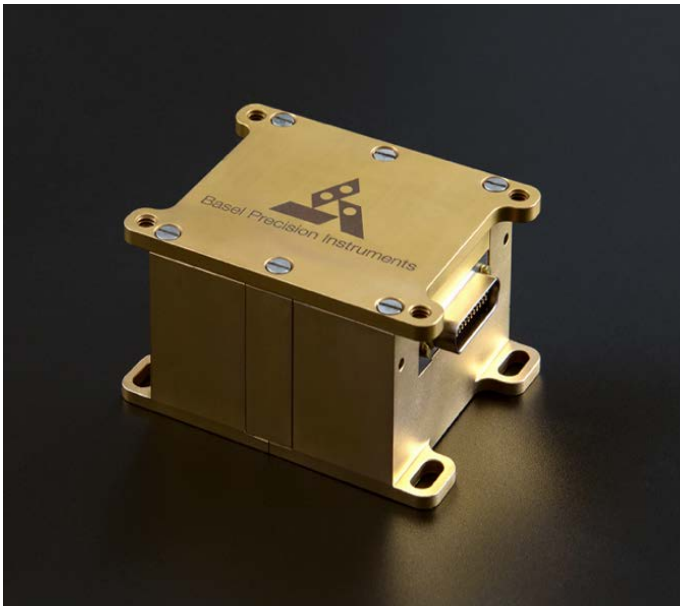

Project 1: Cryogenic Microwave Filter and Thermalizer (MFT)

Microwave filtering and thermalization of signal wires are two critical ingredients in setting up a sensitive low-temperature experiment. Our silver-epoxy based compact MFT filters unite efficient electron thermalization and ultra-strong microwave attenuation. The MFT filters are an instrumental part of the milli-Kelvin experiments at the Zumbühl group that have cooled Coulomb blockade thermometers to 10mK and below.

As part of this secondment project, you will test new MFT designs in close collaboration with the Zumbühl lab team, participate in the design and production of compact MFT boxes and optimize the production process.

Three stacked MFT filter boxes under test in a cryo-free dilution fridge at Uni Basel.

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Project 2: Low-Noise High-Resolution DAC Voltage Source

With the scaling up of quantum experiments comes a need for compact, multi-channel, precise voltage sources. In response to this market need, BASPI has developed a new version of its popular LNHR DAC voltage source with the best noise and resolution performance available, a higher number of channels, AWG functionality and a series of other features that make tuning complex quantum devices faster and more efficient. As a result, we believe that BASPI's LNHR DACII is the best available device on the market for controlling ultra-sensitive DC lines, such as gate voltages on a quantum device.

As part of this secondment project, you will build the setup and test the LNHR-DACII in a laboratory environment. You will examine specific features to determine that they meet the customer requirements and suggest new features. You will test the LNHR-DACII alone or as part of complex running experiments.

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Project 3: Python and QCoDeS Interfaces for LNHR DACII

BASPI provides python drivers for the LNHR DAC. This project involves working with our team to expand this driver for the LNHR DACII and develop a new QCoDeS interface.

Project 4: Automization of Test Setups

Providing customers with timely responses and short delivery times is of utmost importance to BASPI. While our production capacity has significantly increased in the past two years, we continue to improve efficiency whenever possible. The production process of our ultra-low-noise and ultra-stable electronics includes careful screening and selection of the best, lowest noise key components such as input transistors and reference voltage sources. As part of this secondment project, you will automate some of our test procedures. Your work will include designing test setups and circuitry, developing digital interfaces and automizing data acquisition and storage.

For more information or to apply, please contact us at info@baspi.ch