

The Technical University of Munich (TUM) operates the Forschungs-Neutronenquelle Heinz Maier-Leibnitz (FRM II) in Garching near Munich, which is one of the most powerful and modern neutron sources. The leading position in science in the field of research with neutrons is achieved by a cooperation between the TUM and the Helmholtz Centres in Jülich and Geesthacht under the name Heinz Maier-Leibnitz Zentrum (MLZ). We are looking for:

## Practical Semester - B.Sc. Thesis (m/w/d)

### Physical Engineering - Computer Science - Electronic Engineering

**Active probing with antimatter in extreme conditions** - Our facility is home to NEPOMUC, the world's most intense antimatter beam. NEPOMUC's instruments need to charge their sample holders to tens of kV to work which makes it extremely difficult to apply electric currents or potentials to samples during the measurement. This severely limits the application of e+ in the study of novel construction techniques of batteries, solar panels and integrated electronics.

We are now developing an active sample holder, employing light to both power its onboard electronics and to communicate. You'll be tasked, with the support of our team and the TUM facilities, to build, test and program a prototype of this sample holder. This will involve:

- Progressive assembling of the prototype, with frequent electrical tests.
- Programming the onboard MCU and testing all of the prototype's subsystems.
- Designing and implementing a control protocol.
- Testing the autonomous optically-driven functioning of the prototype.
- (optional) Testing the system in UHV at 30kV



You will be given the opportunity to experience applied research first-hand and to practice interdisciplinary collaboration with scientists and engineers. We put a special emphasis on the education aspect during the training. In addition to your work, you will gain an insight into the technology and applications of a large-scale research facility.

In case of an online application please send the documents compiled in a PDF file.