

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

**Upgrading the control system of the world's most intense antimatter beam** - Our facility is home to NEPOMUC, the world's most intense antimatter beam. As NEPOMUC is an extremely complex machine, achieving high uptime, efficient beam optimization and quick debug of faults requires a stable and redundant control software with rigorous error handling. This has prompted the overhaul of the previous beam control software and the development of a new control/diagnostic system based on resident C++ daemons running on Linux servers.

You'll be tasked with implementing, along with our team, a part of your choice of the new control system. This will involve:

- Writing specialized drivers.
- Integrating them in daemon programs according to the system design guidelines and exposing the proper control/diagnostic functions.
- (optional) Exposing these functions as web APIs and integrate them in the beam control web-based GUI.
- Testing and debugging the daemons, with emphasis on fault resistance, unexpected input and automated recovery after power cuts.
- Documenting the daemons.



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.