

Diploma work in applied nuclear physics

Optimization and reimplementation of data reduction routines

Introduction

The fusion group of the Division of Applied Nuclear Physics at Uppsala University is looking for diploma students. The group is operating in Uppsala, Sweden, and has its roots in neutron instrumentation for fusion energy research. The group is involved in various parts of the european fusion research program; the development and data interpretation of several neutron detectors, the [neutron camera at MAST](#), Oxford, as well as the two neutron spectrometers [TOFOR](#) and [MPRu](#), at [JET](#), Oxford; and modelling of fusion plasma behaviour.

The proposed diploma work concerns development work for the TOFOR spectrometer. TOFOR is a time-of-flight spectrometer that measures the time it takes for neutrons to fly between one set of detectors (called "S1") to another set (called "S2"). The flight time is related to the energy of the neutrons. Hence, a measured time-of-flight spectrum is related to the energy spectrum of the neutrons emitted from the plasma. This energy spectrum, in turn, reflects various properties of the fuel ions in the plasma, such as their temperature.

Project description

The data acquisition system of TOFOR is currently being updated to a completely digital system. The development of the data analysis has so far been performed in MATLAB. This project will convert the existing MATLAB code to an optimized and python adaptable library.

Who are we looking for?

- You have taken courses in numerical methods and programming
- You are capable of reading MATLAB code and writing c++ and/or python code.
- You have some knowledge of parallelization of codes
- You have some knowledge of optimization of codes

Contact

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