Diploma work in applied nuclear physics

Implementation of an energy calibration procedure for TOFOR using a LASER light source.

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 from one set of detectors (called “S1”) to another set (called “S2”). In order to be accepted as an event, the signals from the detectors have to have an amplitude above a set threshold. These thresholds have to be well known and monitored permanently. The monitoring procedure is based on measurements using a laser light source of variable intensity.

Project description

The scope of the proposed work is to establish a calibration routine for the S1 and S2 detectors and an automatized monitoring procedure that allows for calibration measurements and data transfer on a daily basis without requiring physical access to the instrument.

Who are we looking for?

- You have basic knowledge of scintillation detectors’ response to neutrons and light.
- You are interested in hands-on laboratory work.
- You are capable of writing python code.
- You are interesting in doing part of your diploma work abroad, in an international research environment.

Contact

If you are interested in this project, please contact Matthias Weiszflog (matthias.weiszflog@physics.uu.se) or Erik Andersson Sundén (erik.andersson-sunden@physics.uu.se).