Important Dates

Deadline for Application: 25 May 2014
18th JCNS Laboratory Course: 1–12 September 2014

Where it takes place

Forschungszentrum Jülich GmbH
Wilhelm-Johnen-Straße
52428 Jülich

Heinz Maier-Leibnitz Zentrum
Lichtenbergstraße 1
85748 Garching bei München

The first week (lectures) of the laboratory course will take place at Forschungszentrum Jülich near Aachen, Cologne and Düsseldorf, the second week (experiments) at the Heinz Maier-Leibnitz Zentrum MLZ in Garching near Munich.

Transportation

Participants arriving by plane may chose Düsseldorf or Cologne airport, those taking the train should enter Jülich as destination in the travel planner. Detailed travel instructions will be given after the acceptance of participants. Transportation to Munich and back will be provided by the organisers.

Accommodation

Participants will be accommodated in shared rooms at "JUFA guesthouse Jülich" for the first week and at "Haus International Munich" for the second. Breakfast and dinner will be included. On working days lunch will be provided at the cafeterias of Forschungszentrum Jülich and Technical University Munich.

Contact

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18th JCNS Laboratory Course

Neutron Scattering

1 –12 September 2014
Jülich/Garching, Germany

JCNS Jülich Centre for Neutron Science
MLZ Heinz Maier-Leibnitz Zentrum
JÜLICH FORSCHUNGSZENTRUM

The Jülich Centre for Neutron Science of Forschungszentrum Jülich, Germany, organises in cooperation with the University of Münster (Prof. D. Richter, Dr. R. Zorn) and the RWTH Aachen University (Prof. T. Brückel, Prof. G. Heger, Prof. G. Roth) a laboratory course in neutron scattering with experiments at the neutron scattering facilities of the Heinz Maier-Leibnitz Zentrum MLZ.

The laboratory course will consist of lectures, exercises and an experimental section. It is the aim of the course to give a realistic insight into the experimental technique of neutron scattering and its scientific power.

The lectures will encompass an introduction to neutron sources, into scattering theory and instrumentation. Furthermore, selected topics of condensed matter research will be presented. In the afternoon, exercises will be solved in tutored groups to deepen the understanding of the subjects taught.

For the experimental part the participating students will work in groups of five. Each group will perform one neutron scattering experiment per day, i. e. each group will work at five different instruments. The experimental data measured will be analysed by the students assisted by the scientist responsible for the instrument.

If you are a student of physics, chemistry, material science or biosciences with BSc (or Vordiplom or equivalent) you are welcome to apply for participation in the 18th JCNS Laboratory Course Neutron Scattering. To follow the course you will need elementary knowledge of applied mathematics, solid state physics and quantum mechanics which is usually part of a completed BSc study of natural sciences. The course is on beginner level and **not** intended for post-docs having already some experience in neutron scattering.

The laboratory course is free of charge, there is no tuition fee. Forschungszentrum Jülich supports non-local students with free accommodation and half board. Travel grants will be granted to a limited number of students.

To apply for participation please fill the online form at www.neutronlab.de

This will generate a PDF form which should be signed and sent by mail or fax to the organisers arriving not later than **25 May 2014 (Deadline).**

If you wish to send a scanned copy (including your signature!) please send it to **neutronlab@fz-juelich.de**

We acknowledge financial support by the EU projects NMI3, SoftComp and ESMI.

The laboratory course is part of the curriculum of the University of Münster and the RWTH Aachen University.

T. Brückel | G. Heger | D. Richter | G. Roth | R. Zorn

Lectures and exercises:

Introduction to Neutron Scattering (Jülich)

Start: 1 September 2014 8:40 h
End: 5 September 2014 18:00 h

- Introduction: Neutron Scattering in Contemporary Research
- Neutron Sources
- Symmetry of Crystals
- Diffraction
- Nanostructures Investigated by Small Angle Neutron Scattering
- Macromolecules (structure)
- Spin Dependent and Magnetic Scattering
- Structural Analysis
- Neutron Reflectometry
- Magnetic Nanostructures
- Inelastic Scattering
- Strongly Correlated Electrons
- Dynamics of Macromolecules
- Applications of Neutron scattering – an Overview

Experimental section (Garching)

Start: 8 September 2014 9:00 h
End: 12 September 2014 17:00 h

In the experimental section, experiments on typical neutron scattering instruments will be performed:

- Backscattering spectrometer
- Polarisation analysis
- Reflectometer
- Neutron spin echo
- Small angle scattering
- Ultra-small angle scattering
- Single crystal diffraction
- Triple-axis spectrometer [1,2]
- Powder diffractometer [3,2]
- Time-of-flight spectrometer [2]
- Cold neutron triple-axis spectrometer

(1-3 made available by [1]Georg-August-Universität Göttingen,
[2] Technische Universität München,
[3] Karlsruhe Institute of Technology)