CARL VON OSSIETZKY
universität OLDENBURG

Registration

For details about the application process and to apply, see www.mcs.uni-oldenburg.de.
The deadline for application is **May 15, 2018**.

All applicants are asked to complete a questionnaire stating their fields of interest and previous knowledge.

The fee for the summer school is 350 EUR and includes all course material and dinner. We offer a limited number of DAAD grants (also including accommodation, breakfast, and travel support) for Bachelor, Master, and diploma students. Recipients of grants only have to pay a reduced fee of 100 EUR.

Notification about the success of the applications will be sent out until June 1, 2018

Accommodation

Information about suitable hotels is available on the web page. Room reservations (including breakfast) have been made in a hotel in the city center for recipients of grants.

The dining facilities at the Wechloy Campus (same building) or at the Haarentor Campus (a 15-minute walk away) offer a variety of lunch choices.
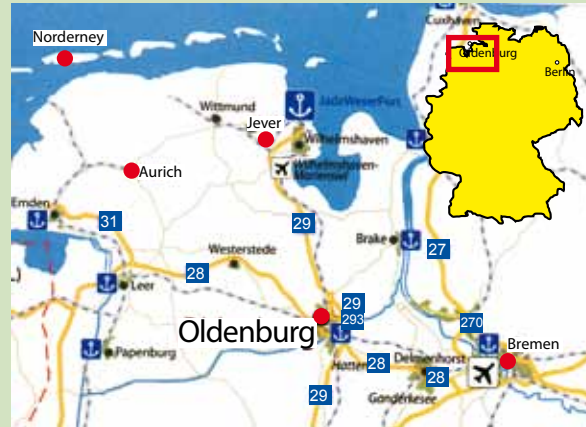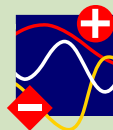
Organization

Carl von Ossietzky Universität Oldenburg
Prof. Dr. Alexander K. Hartmann
Dr. Stefan Harfst

Contact

mcs@uni-oldenburg.de
Please refer to the website www.mcs.uni-oldenburg.de
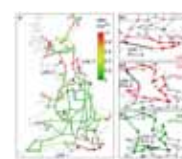for updates and more detailed information.

Sponsored by:

DAAD Deutscher Akademischer Austausch Dienst
German Academic Exchange Service

Summer School

MODERN COMPUTATIONAL SCIENCE
ENERGY OF THE FUTURE

September 3 – 14, 2018
University of Oldenburg, Germany

Overview

Due to the finiteness of fossil energy sources and the ongoing climate change many countries begin to over their energy needs with renewable energies. The production of solar and wind energy is increasing world ide and can even be cheaper than classical energy production, inparticular if taking into account secondary costs.

Switching to the use of regenerative energies still requires many advances in technical areas. This includes improving the efficiency of power generation, e.g. for solar cells or wind turbines, and of energy storage. On larger scales, the layout and positioning of wind farms and the capacity and stability of power networks have to be optimized. In the field of energy production control, the analysis and forecasting of the weather also play a big role, e.g. for the situational activation of conventional backup power plants.

In all these applied areas computer simulations and the analysis of large amounts of data play a prominent role and require the use of computers. The aim of the summer school Modern Computational Science: Energy of the Future is therefore the professional training of the participants in the highly topical research field of "Renewable Energies". During the summer school, the essential numerical approaches in this area will be taught in theory and practised in extensive hands-on exercise sessions.

Topics

Fundamentals:
high-performance computing, data analysis, Monte Carlo simulations, differential equations, networks

Energy simulations:
computational fluid dynamics, energy networks, collective dynamics of power grids, analyis of wind data, short-term weather prediction

External Lecturers

Helmut G. Katzgraber, Texas A&M University and ETH Zürich
Oliver Melchert, University of Hannover
Marc Timme, Technical University of Bremen
A. Peter Young, University of California Santa Cruz

Lecturers from the University of Oldenburg

Carsten Agert, Energy Networks
Alexey Chernov, Numerical Analysis
Sebastian Lehnhoff, Energy Informatics
Bernhard Stoevesandt, Wind Energy Systems
Lüder von Bremen, Energy Meteorology
Matthias Wächter, Stochastic Modeling of Wind Fields
Björn Witha, Energy Meteorology
Stefan Harfst, Computational Science

Lecture Notes

Each participant will receive lecture notes at the beginning of the Summer School. Additionally, a free copy of the book *A Big Practical Guide to Computer Simulations* by A. K. Hartmann will be handed out to each participant.

Venue

The Summer School will be held at the Wechloy Campus of the University of Oldenburg, offering a pleasant environment and plenty of nearby amenities.

Social Events

On Wednesday, September 5, participants will be invited to a barbecue.

Excursions will be organised on Wednesday afternoons and on the weekend.