CARL
VON
OSSIETZKY
universität | OLDENBURG

Registration

To register, please visit www.mcs.uni-oldenburg.de.
The deadline for registration is **June 1, 2011.**

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

We offer a limited number of grants (including accommodation, breakfast, dinner, course material, and, for DAAD grants, travel support) for Bachelor, Master, and diploma students. Recipients of grants only have to pay a small fee of **100 EUR**. For details about the application process, see www.mcs.uni-oldenburg.de. Notification about the success of the applications will be sent out until **June 15, 2011.**

We also (partially) support the option to register immediately by paying a discounted fee of 650 EUR (including accommodation in a 3-star hotel, breakfast, dinner, and course material). As a third option, you can register for a fee of 250 EUR (including dinner and course material, but with self-organised accommodation, e.g. youth hostel).

Accommodation

Room reservations (including breakfast) have been made in a 3-star hotel in the city center. The registration fee also includes dinner at the Wechloy Campus.

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.
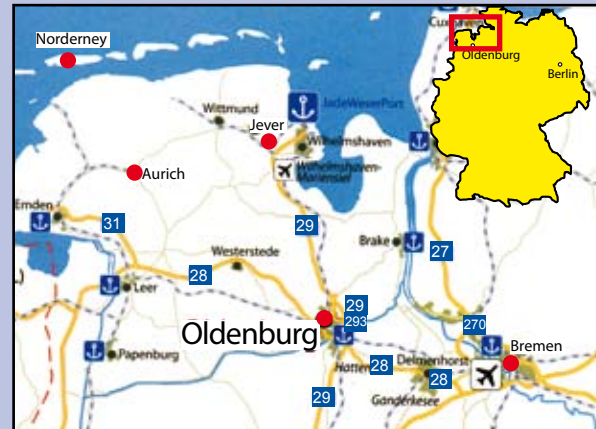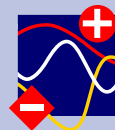
Organisation

Prof. Dr. Alexander K. Hartmann, University of Oldenburg
Dr. Reinhard Leidl, University of Oldenburg

Contact

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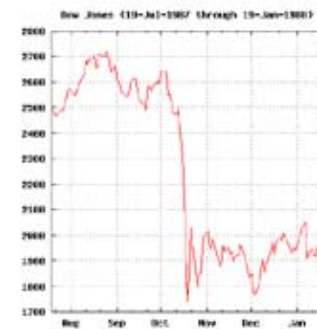for updates and more detailed information.

Sponsored by:

DAAD Deutscher Akademischer Austausch Dienst
German Academic Exchange Service

EWE | STIFTUNG

Summer School

MODERN COMPUTATIONAL SCIENCE

SIMULATION OF EXTREME EVENTS

August 15 – 26, 2011
University of Oldenburg,
Germany

Overview

Extreme events like storms, stock-market crashes or crowd panics have a growing impact on the society. Furthermore, they play an important role in Science, for example in order to understand conformal changes in proteins, model the statistics of biological sequence alignments or study the distributions of ground-state energies of random systems. To investigate rare events, computer simulations play an ever-increasing role. With hardware costs continuing to fall and the development of sophisticated algorithms and powerful software packages, many research projects in this field rely heavily on the use of powerful computer systems. This Summer School addresses students from their third year onwards (including PhD students) who wish to learn more about recent developments in Computational Science and the field of extreme events, in particular. Participants should have a basic knowledge of a higher programming language like C/C++ or Fortran.

In the first part, an introduction into basic tools and methods (programming, data structures, numerical algorithms, statistical data analysis, etc.) will be given. The second part will be devoted to specific topics in the area of extreme events. The lecturers will present results at the forefront of research from their respective areas of expertise. Practical computer exercises will complement the lectures, enabling the participants to deepen their knowledge in a hands-on approach.

Topics

- **Fundamentals**: rare-event theory, algorithms, software engineering, differential equations, data analysis, Monte Carlo simulations
- **Extreme events:** dynamics of pedestrians (crowds), extreme values in matrices, large-deviation properties of statistics of protein comparison, thermodynamics of extremes, time-series analysis of weather and stock-market data, simulation of extreme polymer conformations

External Lecturers

Christoph Dellago, University of Vienna
Helmut G. Katzgraber, Texas A&M University and ETH Zurich
Frauke Liers, University of Cologne
Thomas Prellberg, Queen Mary University of London
Hugo Touchette, Queen Mary University of London
Ryan Woodard, ETH Zurich

Lecturers from the University of Oldenburg

Olaf R. P. Bininda-Emonds, Systematics and Evolutionary Biology
Bernd Blasius, Mathematical Modelling of Biosystems
Andreas Engel, Statistical Physics
Alexander Hartmann, Computational Theoretical Physics
Oliver Melchert, Computational Theoretical Physics
Joachim Peinke, TWiSt - Turbulence/Wind Energy/Stochastics, and ForWind
Thomas Schuster, Numerical Analysis

Lecture Notes

Each participant will receive lecture notes at the beginning of the Summer School. Additionally, a free copy of the book *A 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, August 17, participants will be invited to a barbecue.
Excursions will be organised on Wednesday afternoons and on the weekend.

Isle of Norderney

Jever Brewery

wind turbine

City of Bremen