

Directions

S1|03 23 (public talks), Hochschulstraße 3, and **S1|22 403** (modules 1, 2, 4, 5), Alexanderstraße 2, are located at the **Stattmitte** campus of TU Darmstadt.

From **Darmstadt central station** take a bus or tram to **Schloß** (lines 9E, 672, F/U, H, K) or **Willy-Brandt-Platz** (lines 3, K, RH).

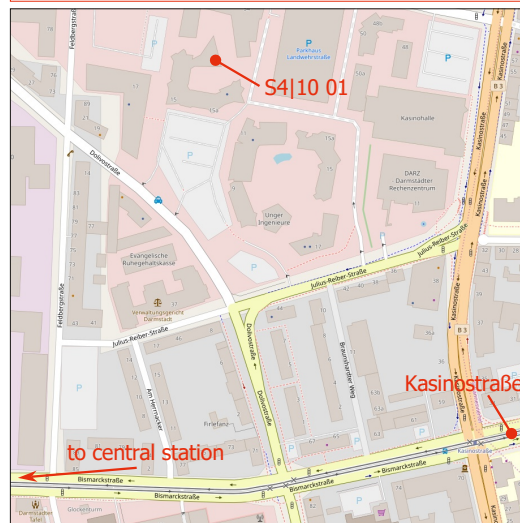
Enter the campus...

- from Schloß: walk down Schloßgraben, past the Darmstadtium conference building (5 minutes walk).
- from Willy-Brandt-Platz: access and pass the Herrngarten park via Bismarckstraße (7 minutes walk).

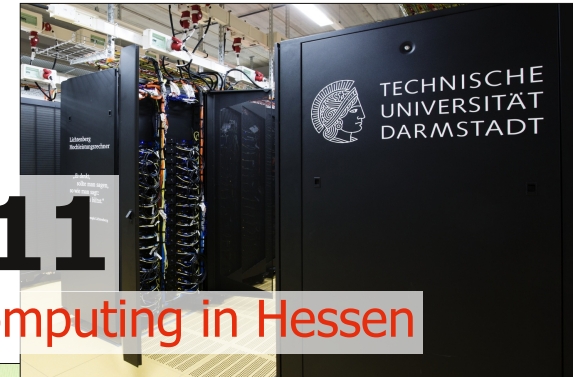
S4|10 01 (module 3) is located at **Dolivostraße 15**.

From **Darmstadt central station** either walk down Bismarckstraße 15 minutes), or take bus or tram to **Kasinostraße** station (lines 3, K, RH).

From there walk down Dolivostraße and enter the office building area via the parking lot (5 minutes walk).



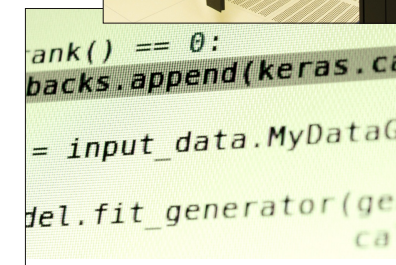
Hessisches Kompetenzzentrum
für Hochleistungsrechnen



HiPerCH 11

High Performance Computing in Hessen

September 23-27, 2019
Darmstadt



The 11th installment of the HiPerCH workshop series takes place at Technical University Darmstadt. It focuses on **Deep Learning** on high performance computing clusters, and related tools and languages. In addition, we hold a module on **Fortran modernization** in cooperation with NAG.

The HiPerCH workshops are conducted by the **Competence Center for High Performance Computing in Hessen** (HKHLR). They are targeted at students and scientists from Hessen, Mainz, and Kaiserslautern with interest in programming modern HPC hardware.

Registration: The modules can be booked separately. Please note that there is a limited number of participants for each module. Please register on our webpage:
<https://www.hkhlr.de/en/events/hiperch-11-2019-09-23>

Attendance fee: The workshop consists of several modules, all of which can be booked separately, with an attendance fee per module. This fee includes lunch and coffee breaks as well as the evening event. The fees given refer to students/academia/other. Bachelor and Master students will need to provide a certificate of study. After your registration you will receive a bill for this workshop in early September. Please pay only after you have received the bill.



Talks and lectures

| Public talks

Kristian Kersting

Deep Machines That Know When They Do Not Know

Olena Linnyk

What Can Machine Learning Do For My Project

Christian Griebel

New Computational Resources with Lichtenberg II and the Coming DL/ML Software Environment

Heiko Mantel

Software-Factory 4.0

Mohammad Norouzi

Automatic Construct Selection and Variable Classification in OpenMP

Christian Bischof

News in Performance Modeling

| Module 1a **Intro to Deep Learning**

Topics

- Deep Learning concepts
- Model training and evaluation

Prerequisites

none

| Module 1b **Scaling Deep Learning**

Topics

- Parallelizing Deep Learning on an HPC cluster
- Demonstration of different scaling approaches

Prerequisites

Basic knowledge of Tensorflow/ Keras

Trainers

Tim Jammer, Marcel Giar (HKHLR)

Attendance fee (per part)

€2.50/10.00/100.00

| Module 2 **Fortran Modernization**

Topics

- Writing modern Fortran code and modernize existing code
- Tools and techniques for Fortran software development

Prerequisites

Basic Fortran knowledge (any standard)

Trainer

Wadud Miah (NAG)

Attendance fee

€10.00/40.00/400.00

| Module 3 **R on HPC Systems**

Topics

- R design philosophy
- R serial performance
- Parallelization techniques in R

Prerequisites

Beginners with basic understanding of programming concepts

Trainer

René Sitt (HKHLR)

Attendance fee

€5.00/20.00/200.00

| Module 4 **Scientific Data Processing with Python**

Topics

- Introduction to the Scientific Python stack
- NumPy & SciPy
- Pandas & scikit-learn

Prerequisites

Basic Python knowledge

Trainers

Marcel Giar, David Palao (HKHLR)

Attendance fee

€5.00/20.00/200.00

| Module 5 **Parallel Computing, Deep Learning and Reinforcement Learning Workflows in MATLAB**

Topics

- Parallel and Cluster Computing with MATLAB
- Deep Learning with MATLAB

Prerequisites

Basic MATLAB knowledge

Trainer

Dmytro Martynenko (MathWorks)

Attendance fee

€2.50/10.00/100.00

Dates and locations

Mon, Sep 23	Tue, Sep 24	Wed, Sep 25	Thu, Sep 26	Fri, Sep 27
Public talks Kersting 9:15 - 10:45 Linnyk 11:15 - 12:45 S1 03 23	Public talks Griebel 9:15 - 10:45 Mantel et al. 11:15 - 12:45 S1 03 23	Module 2 Fortran Modernization 9:00 - 18:00 S4 10 01	Module 3 R on HPC systems 9:00 - 18:00 S1 22 403	Module 2 Fortran Modernization 9:00 - 18:00 S4 10 01
Module 1a Introduction to Deep Learning 14:00 - 18:00 S1 22 403	Module 1b Scaling Deep Learning 14:00 - 18:00 S1 22 403	Module 4 Python 9:00 - 18:00 S1 22 403	Module 5 MATLAB 9:00 - 13:00 S1 22 403	
	Evening event 19:00 TBD			

Practical information

All talks and lectures will be in held in **English**.

All modules are lectures with hands-on training. **Participants are expected to bring their own laptop** for all hands-on sessions. Some of them will be carried out via SSH connection. Please refer to our website for the exact requirements for your module.

All whole day events include a **lunch break**.

HKHLR has reserved a limited amount single rooms at **InterCity Hotel**, located near the train station, with special pricing for HiPerCH visitors. The price for a single room will be €85,- per night. This includes breakfast and a public transport ticket for Darmstadt during your stay. This offer will be available until Friday, August 30. Please refer to the keyword sent to you in your HiPerCH registration confirmation.

An **evening dinner** will be held on Tuesday evening. All participants who want to join are asked to to book for the dinner during the online registration.