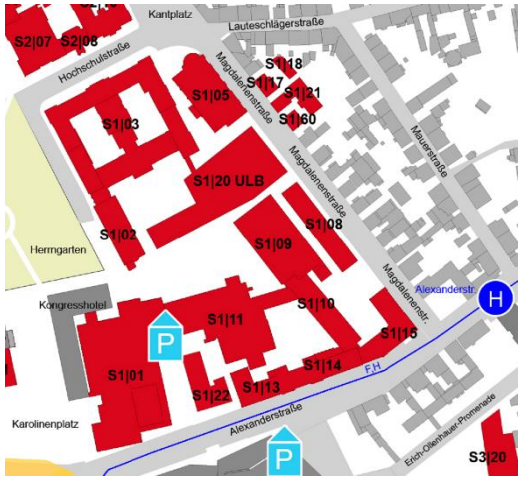

Location:

Technische Universität Darmstadt

Building S1|22, Room 403 and 302
Alexanderstraße 2
64283 Darmstadt

Travel by public transport:
From Darmstadt Hauptbahnhof (main railway station), you can take bus lines F (Oberwaldhaus), H (Alfred-Messel-Weg) and K (TU Lichtwiese/Mensa) or tram lines 2 and 3. Get off at "Schloss", or at "Alexanderstraße" (only bus F and H).

The building is just a few minutes' walk from the stops.

ProTHPC is the abbreviation for "Proficiency Training High Performance Computing" and stands for short training units, which offer a quick introduction to the respective topics promoting efficient working in the context of HPC.

ProTHPC takes place at least once a year in southern Hesse (Frankfurt or Darmstadt) and in central or north Hesse (Giessen, Marburg, or Kassel). Covering the following topics:

First Day: Linux and shell scripting –quick access to HPC systems and **Introduction to Batch Job Scheduling**

Second Day: Training course on the **Linux software build process**, and introduction to **version control with Git**

Third Day: Training course on the **TotalView debugger**

All courses consist of lectures, some are supplemented with practical exercises.
Please bring your own laptop.

The next ProTHPC will take place on **June 24-26, 2019 in Darmstadt.** ProtHPC is free of charge, participants organize their own refreshments during breaks.

Please register via
https://www.hkhlr.de/en/events

Hessisches Kompetenzzentrum f. Hochleistungsrechnen

Hessisches Kompetenzzentrum für Hochleistungsrechnen

ProTHPC

Proficiency Training High Performance Computing

June 24-26, 2019 in Darmstadt

MONDAY, JUNE 24 Room: 403

10:00-13:30

Linux and Shell Scripting – Quick Access to HPC Systems

This course is an introduction to the Linux command line interface, as found on most HPC systems.

It covers the basics of the command line as well as the fundamentals of shell scripting and prepares their use for the automation and organization of complex workloads in order to enable an easy usage of HPC Systems.

(Level: basic - intermediate)

14:30-17:00

Introduction to Batch Job Scheduling

The resources of HPC Systems are managed by a scheduler, therefore the understanding of the scheduling system is critical to appropriately use HPC systems. This course gives an introduction into the concept of batch job scheduling and its usage to achieve maximum resource utilization. The concepts are illustrated using the Slurm scheduler.

(Level: basic – advanced). *Adapted exercises offer opportunities for knowledge enhancement at all levels. As job scheduling makes use of shell scripting, it is recommended to attend the course introduction into Linux and shell scripting in the morning as well.*

TUESDAY, JUNE 25, Room: 403

10:00-13:00

Training course on the Linux software build process

We introduce the basics of building software in the Linux command line environment, which is common on HPC systems. You will learn how to build your own applications with the Linux make system. The basic use of compilers (compiler flags, optimization, linking to libraries, using a preprocessor, generating serial and parallel code, …) will be covered as well the automation of the build process using makefiles (setting variables, targets, dependencies, linking, ...). We will discuss basic principles of automated build systems using configure files as found in many open source applications.

(Level: intermediate - advanced)

14:00-17:00

Introduction to Version Control with GIT

We present the distributed version control system Git which is well established in the Linux community. Git can be used not only for large projects - such as kernel development - but also for collaboration on smaller projects or for versioning your own projects. The following topics are covered:

- Explanation of key concepts (snapshots, commits, repositories)
- Prerequisites (install, config, create repository)
- Basic commands (status, add, commit, clone, push, pull, remote)
- Branching (create, rename, delete, switch, update & merge branches)
- Typical workflow concepts for branching, Dealing with merge conflicts.

(Level: basic - intermediate)

WEDNESDAY, JUNE 26, Room 302

10:00-17:00

Training course on the TotalView debugger

Debugging is an essential part of software development and application. The advantages of a debugger compared to "printf-debugging" are often underappreciated. TotalView is a powerful tool which helps to find "sophisticated bugs" in parallel jobs quickly, but is also a helpful and timesaving tool for small problems.

TotalView is installed on all Hessian HPC-clusters, and is available for all Hessian researchers.

This course will introduce the basics of debugging and in-depth training on the use of the TotalView debugger. TotalView, in contrast to many free debuggers explicitly supports debugging of parallel applications. This course covers the basic steps of session preparation, processing of core dump files and attaching to a hung process using the TotalView debugger. Advanced techniques covered are reverse debugging and parallel debugging.

(Level: intermediate)