GPU Programming Workshop

LRZ | 8 – 12 June 2026

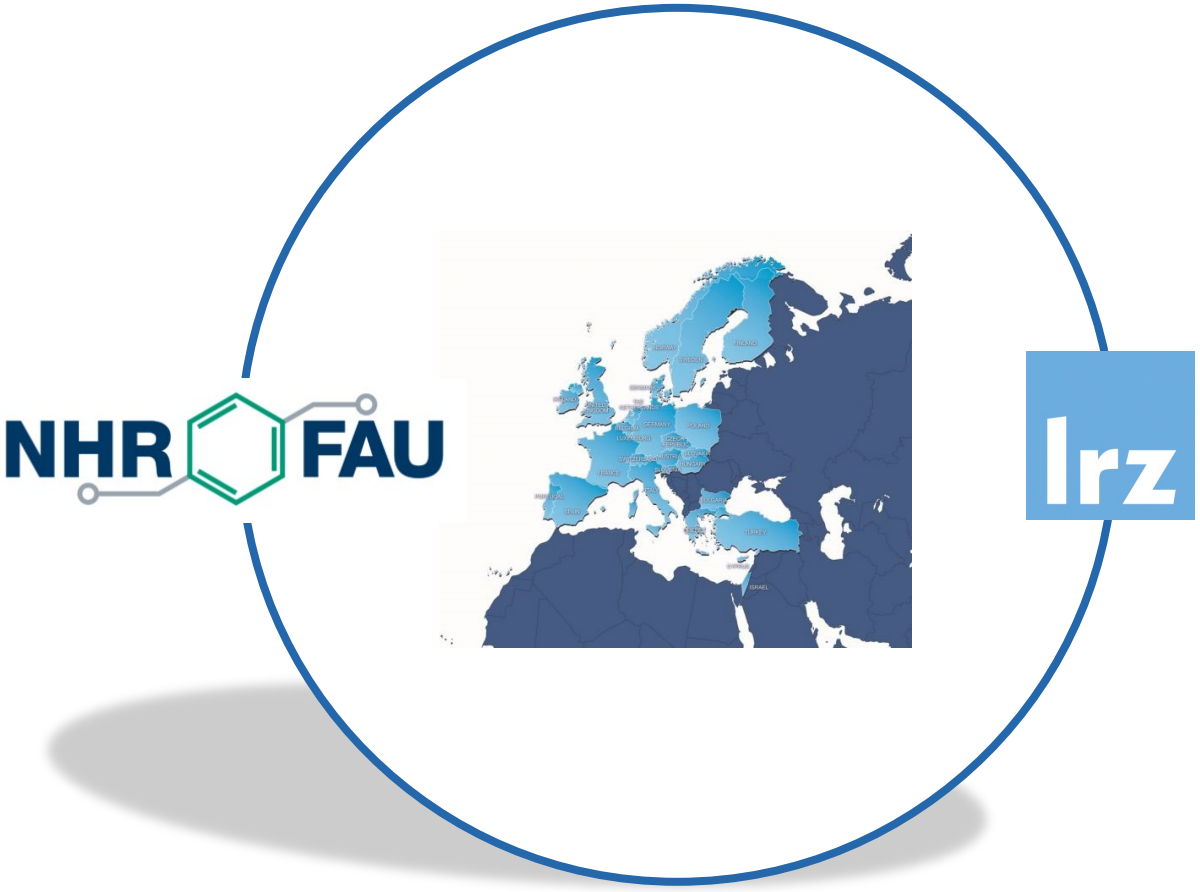
Overview

- In this 3.5-day online workshop you will learn how to accelerate your applications with OpenACC, OpenMP, Kokkos, and CUDA C++ on NVIDIA GPUs.

- The lectures are interleaved with many hands-on sessions using the JupyterHub at NHR@FAU to access the Alex cluster, see https://doc.nhr.fau.de/clusters/alex/

- The workshop is co-organised by Leibniz Supercomputing Centre (LRZ) and Erlangen National High Performance Computing Center (NHR@FAU).

Lecturers



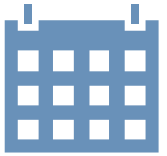
- Dr. Momme Allalen (LRZ)
- Dr. Sajjad Azizi (LRZ)
- Dr. Sebastian Kuckuk (NHR@FAU)
- Dr. Volker Weinberg (LRZ)

Tentative Agenda Day 1:
Fundamentals of Accelerated Computing with OpenACC

- 09:00-09:30 Welcome
- 09:30-11:00 Introduction and Profiling
- 11:00-12:00 OpenACC Directives

- **12:00-13:00 Lunch Break**

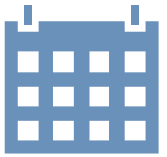
- 13:00-14:00 GPU Programming
- 14:00-15:15 Data Management
- 15:15-15:45 Optimisations
- 15:45-16:00 Q&A, Final Remarks



All times are in CEST

Tentative Agenda Day 2:
Fundamentals of Accelerated Computing with OpenMP and Kokkos

- **09:00-12:00 Fundamentals of Accelerated Computing with OpenMP**
- **12:00-13:00 Lunch Break**
- **13:00-16:00 Fundamentals of Accelerated Computing with Kokkos**



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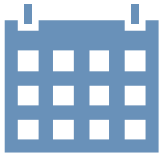
Tentative Agenda Day 3:
Fundamentals of Accelerated Computing with CUDA C/C++ Part I

- **09:00-12:00 Fundamentals of Accelerated Computing with CUDA C/C++ (incl. Coffee Break):**
  - Introduction – learn about course structure, tools used and how to navigate code examples
  - First GPU Application – experience the fundamentals of GPU programming with CUDA
  - Porting Applications – extend previous knowledge with methods for data handling, CPU-GPU transfers, using managed memory and setting up simplistic performance models

- **12:00-13:00 Lunch Break**

- **13:00-16:00 Fundamentals of Accelerated Computing with CUDA C/C++ (incl. Coffee Break)**
  - GPU Architecture – connect your programming skills with the characteristics of GPU hardware and examine the influence of parameter choices
  - Reductions – deep dive into an ubiquitous computational pattern – reductions – and apply incremental optimizations
  - Summary & Outlook – step back for a moment to summarize what you have learned so far



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Tentative Agenda Day 4:
Fundamentals of Accelerated Computing with CUDA C/C++ Part II

- **09:00-11:45 Fundamentals of Accelerated Computing with CUDA C/C++ (incl. Coffee Break)**
  - Debugging – discover how to debug your parallel GPU applications in practice
  - Streams – apply new dimensions of concurrency to maximize performance

- **11:45-12:00 Q&A, Final Remarks**

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Workshop Webpage

- All slides will be made available during the workshop under:

  https://tinyurl.com/hdli1s26

- Further information on:

  - Agenda
  - Training Setup
  - Slides
  - Documentation

Participants List

Kindly use “<first name> <last name> (<institute>)” as your screenname.

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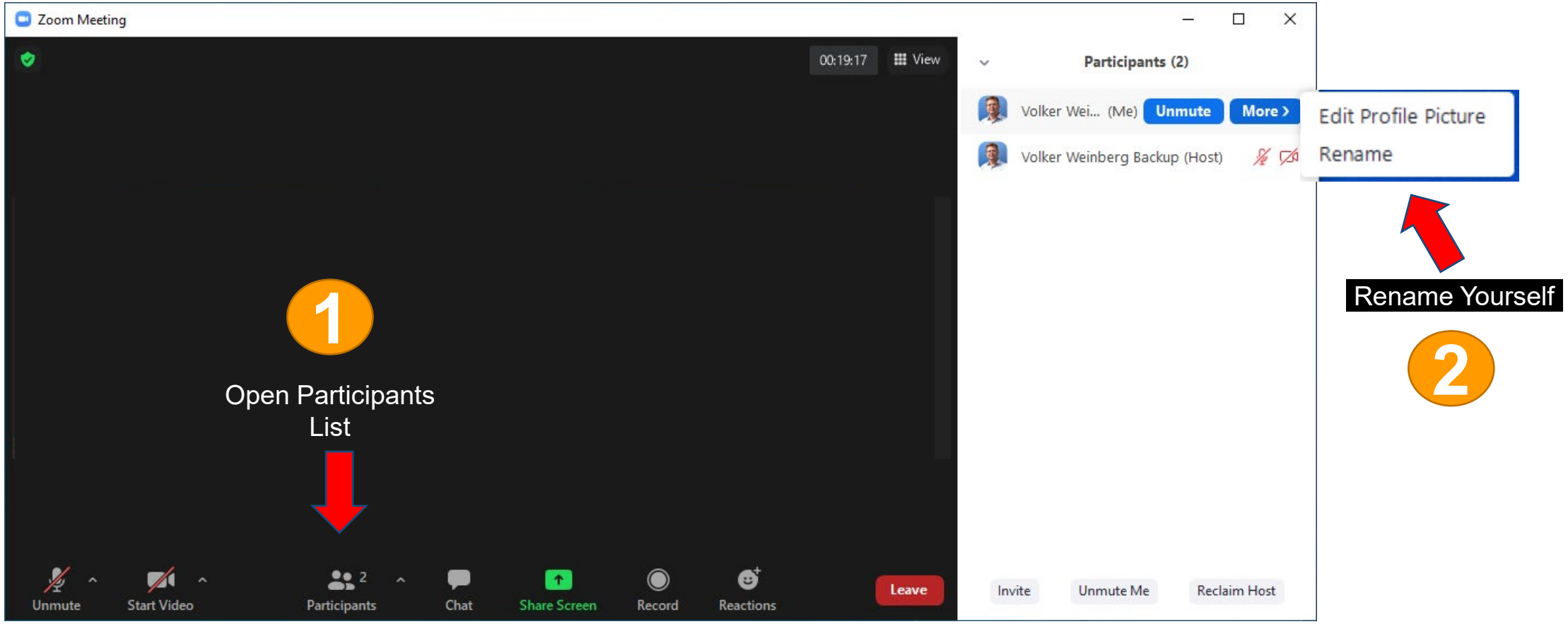
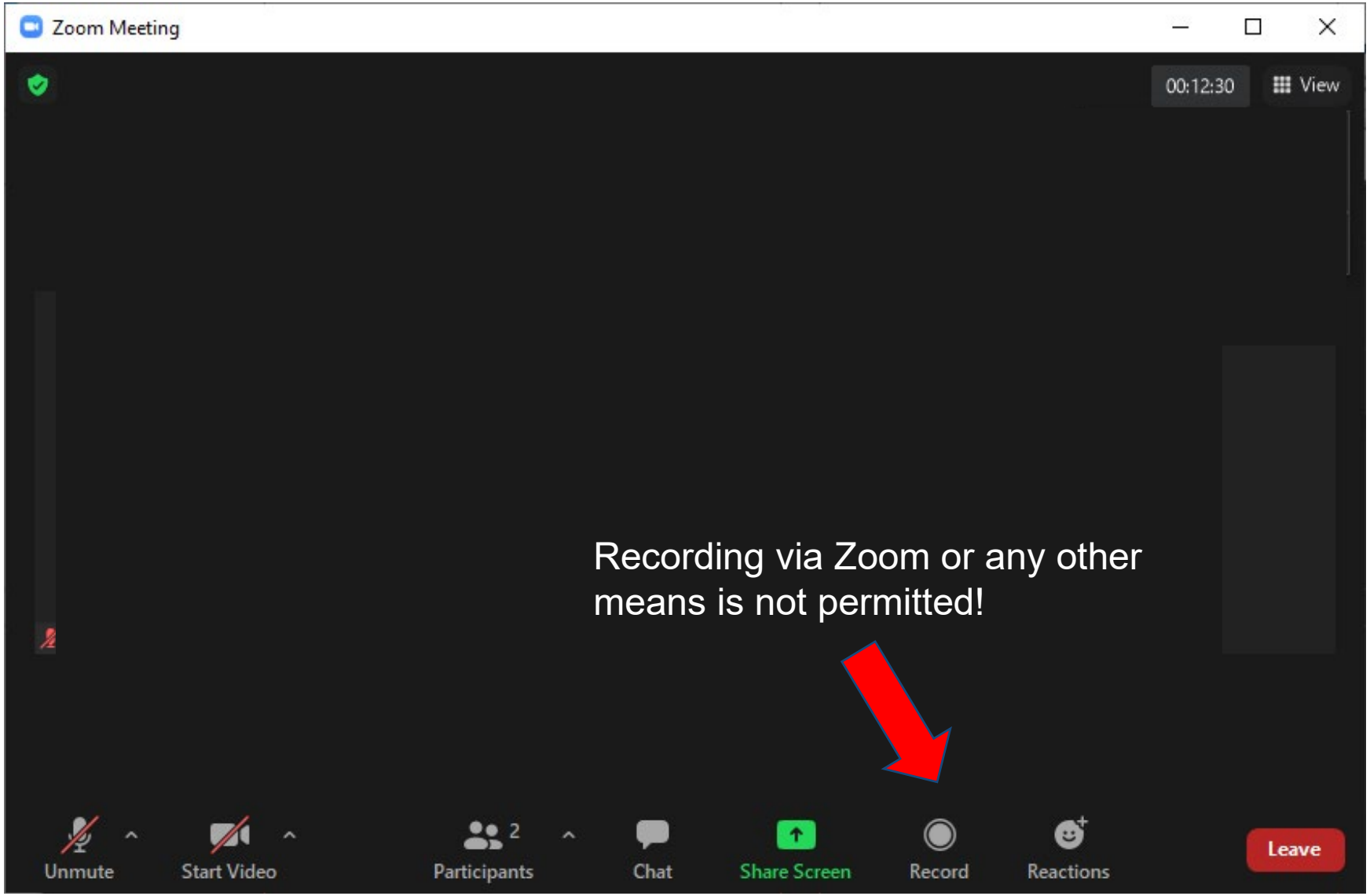
Otherwise you will not receive a certificate of attendance after the course.

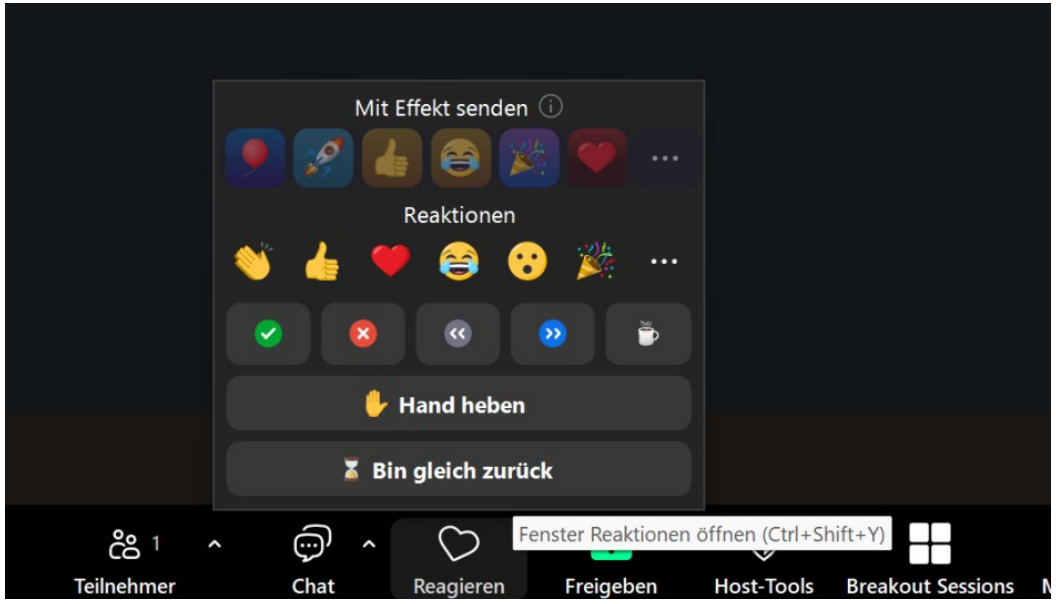


Zoom Recording



zoom Q&A

- Please **raise your hand** if you have questions (of general interest).
- You can also use **chat window** to ask questions.
- If you do not mind, please **show your video when asking questions** to make this course as interactive as possible.
- **Push to Talk:** The Push to Talk feature allows you to remain muted throughout the Zoom meeting and only if you hold down the spacebar you will be unmuted.
- **Instant Feedback:**



And now …

Enjoy the workshop!