



PRACE Workshop: HPC code optimisation workshop

LRZ | 8 – 10 June 2020

PRACE Training



LRZ as part of the Gauss Centre for Supercomputing (GCS) belongs to the 14 **PRACE Training Centres** that started in 2012-2017-2020:

- Barcelona Supercomputing Center (Spain)
- CINECA Consorzio Interuniversitario (Italy)
- CSC – IT Center for Science Ltd (Finland)
- EPCC at the University of Edinburgh (UK)
- Gauss Centre for Supercomputing (Germany)
- Maison de la Simulation (France)
- GRNET – Greek Research and Technology Network (Greece)
- ICHEC – Irish Centre for High-End Computing (Ireland)
- IT4I – National Supercomputing Center VSB Technical University of Ostrava (Czech Republic)
- SURFsara (The Netherlands)
- TU Wien – VSC Research Center (Austria)
- University ANTWERPEN – VSC & CÉCI (Belgium)
- University of Ljubljana – HPC Center Slovenia (Slovenia)
- Swedish National Infrastructure for Computing (SNIC) (Sweden)



Mission: Serve as **European hubs and key drivers of advanced high-quality training** for researchers working in the computational sciences.

<http://www.training.prace-ri.eu/>

Presenters



- **Presenters:**

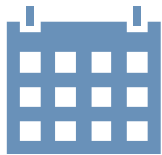
- Fabio Baruffa (Intel)
- Gennady Fedorov (Intel)
- Mathias Gerald (LRZ)
- Thomas Gruber (RRZE)
- Carla Guillen (LRZ)
- Michael Steyer (Intel)
- Igor Vorobtsov (Intel)

- **Assistants:**

- Momme Allalen (LRZ)
- Volker Weinberg (LRZ)



Tentative Schedule



	Main Session
1st day morning (10:00-12:00)	Intro (Volker/Gerald/Thomas) Vectorization (Igor)
1st day afternoon (13:00-16:00)	Intel Compiler (Igor)
2nd day morning (10:00-12:00)	Roofline Model and Advisor (Fabio)
2nd day afternoon (13:00-16:00)	MKL & libraries (Gennady)
3rd day morning (10:00-12:00)	VTune / APS (Michael)
3rd day afternoon (13:00-16:00)	LikWid (Carla, Thomas)
3rd day Q&A	All

Tutorials:

Every day, interleaved with lectures within breakout sessions

Workshop Webpage



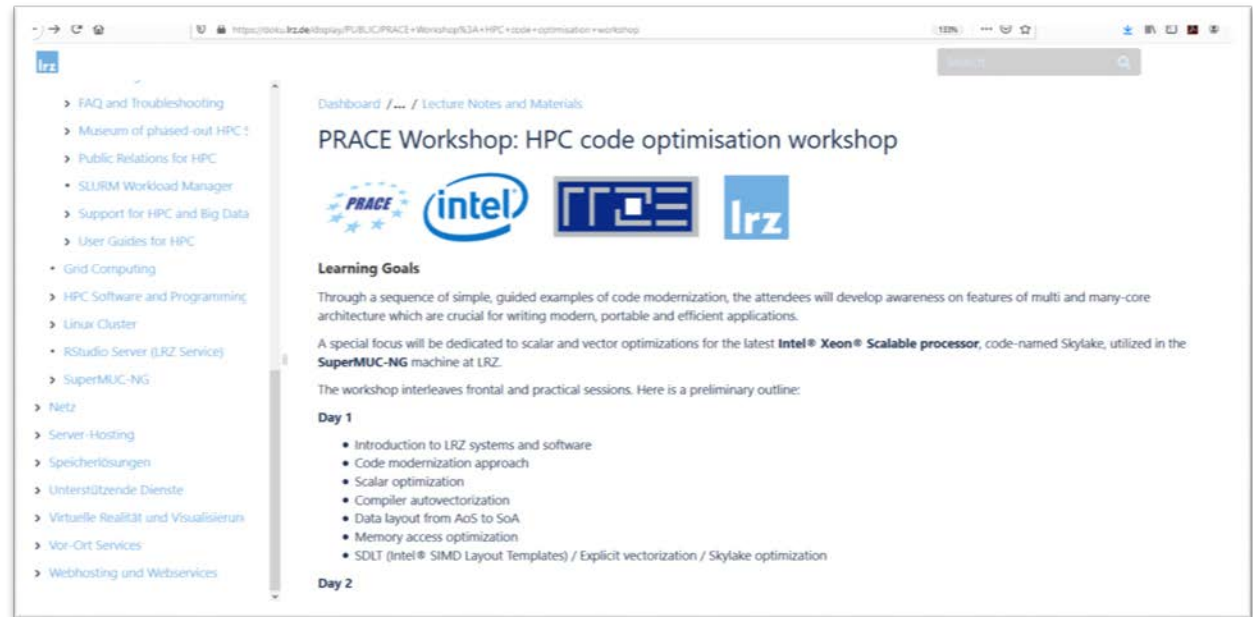
- All slides and exercises will be made available under:

- <https://tinyurl.com/optimisation-workshop>



- Further information on:

- Agenda
- Recommended Access Tools
- ZOOM
- RRZE System



Recommended Access Tools



- Please use your own laptop or PC with **X11 support and an ssh client** installed for the hands-on sessions.
 - Under Windows
 - We recommend to install the comfortable tool **MobaXterm** (<https://mobaxterm.mobatek.net/download-home-edition.html>) which also includes an **X11** client.
 - Alternatively install and run the **Xming** X11 Server for Windows: <https://sourceforge.net/projects/xming/> and then install and run the terminal software **putty**: <https://www.chiark.greenend.org.uk/~sgtatham/putty/latest.html>
 - Under macOS
 - Install X11 support for macOS **XQuartz**: <https://www.xquartz.org/>
 - Under Linux
 - ssh and X11 support comes with all distributions
- For GUI applications we recommend the **NoMachine Enterprise Client**, available for Windows, Linux and macOS. It can be downloaded for free from <https://www.nomachine.com/download-enterprise#NoMachine-Enterprise-Client>. See <https://www.nomachine.com/getting-started-with-nomachine> and <https://www.anleitungen.rrze.fau.de/hpc/dialogserver/> for further details how to connect.



zoom

Joining the Meeting



Join Zoom Meeting

<https://us02web.zoom.us/j/84471400233?pwd=amIpbWRwVFBFN1VSOVFXTHNHY2VuQT09>

Meeting ID: 844 7140 0233

Password: 9wDTcu

If you have problems with your computer audio, you can also join by phone.

Dial by your location

+49 30 5679 5800 Germany

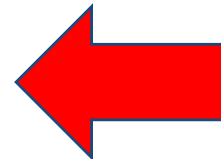
+49 695 050 2596 Germany

+49 69 7104 9922 Germany

Meeting ID: 844 7140 0233

Password: 808523

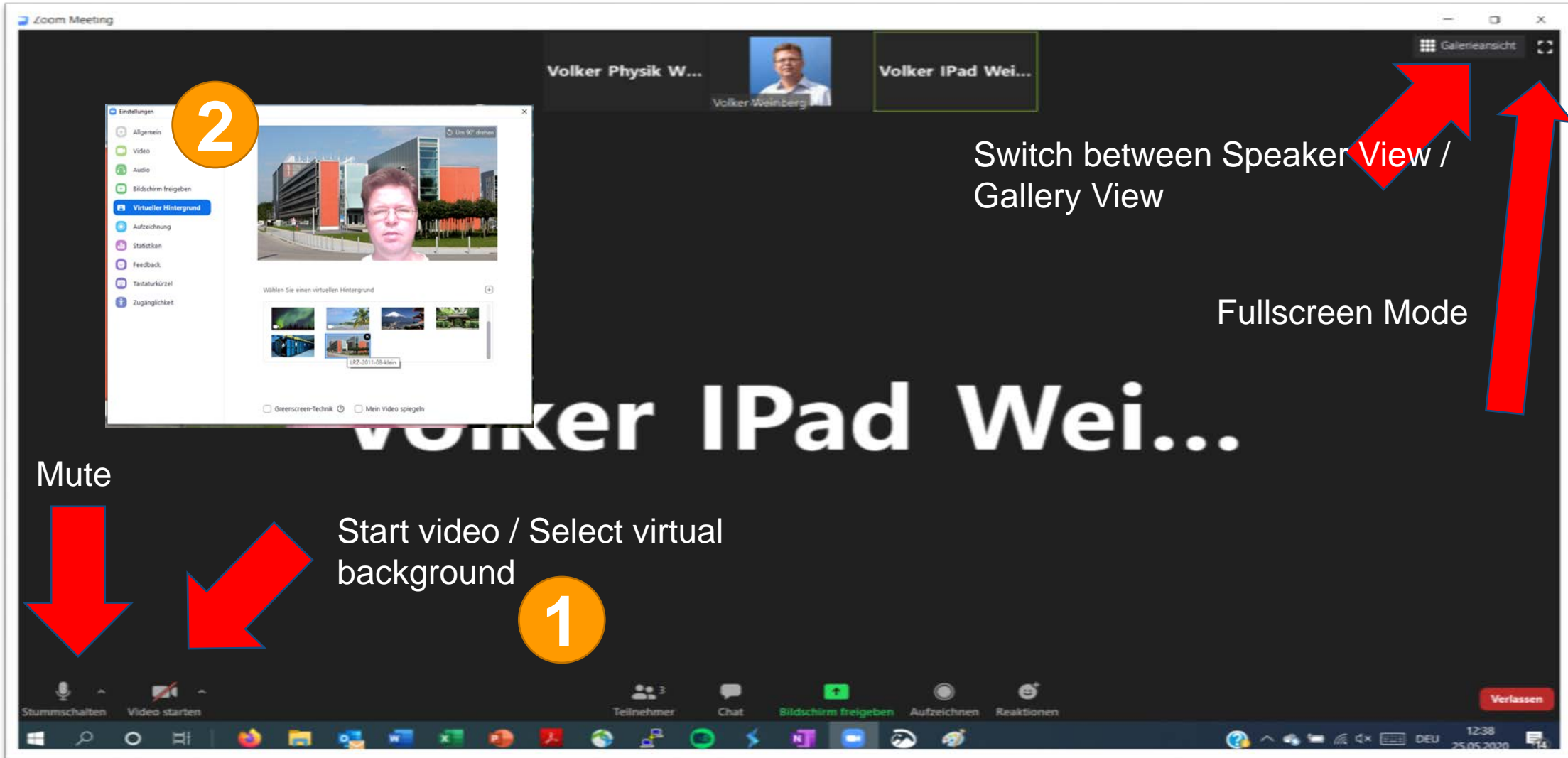
Find your local number: <https://us02web.zoom.us/u/kcbxZo4UN9>





- ZOOM help centre has great resources with help articles and videos for getting started: <https://support.zoom.us/hc/en-us>.
- This “Getting Started” page is a great resource: <https://support.zoom.us/hc/en-us/categories/200101697>
- This FAQ has tons of useful info: <https://support.zoom.us/hc/en-us/articles/206175806-Frequently-Asked-Questions>.
- We strongly encourage you to read some of the basic info relevant to your operating system:
 - Getting Started on Windows and Mac: <https://support.zoom.us/hc/en-us/articles/201362033-Getting-Started-on-Windows-and-Mac>.
 - Getting Started On Chrome OS: <https://support.zoom.us/hc/en-us/articles/213298746-Getting-Started-On-Chrome-OS>.
- You may log in via the app or a browser. We recommend downloading the app for the best experience. It may take several minutes to download, so if you are using Zoom for the first time, please download the app prior to the event, <https://zoom.us/download> , or join the meeting early.
- You may sign up for a free account at zoom.us/signup. Or, you may join a meeting as a guest without a Zoom account.





The screenshot shows a Zoom meeting window. At the top, there are three participant thumbnails: 'Volker Physik W...', 'Volker Weinberg', and 'Volker iPad Wei...'. The main area of the meeting is a black screen with the text 'Volker iPad Wei...' in large white font. A red arrow labeled '1' points to the 'Teilnehmer' (Participants) button in the bottom toolbar. On the right side, a 'Teilnehmer (3)' list is visible, showing the three participants with their names and status icons. Below the list is a reaction menu with icons for thumbs down, thumbs up, clapping hands, coffee, and a clock. A red arrow labeled '2' points to the 'Weitere nonverbale Rückmeldungen' (More non-verbal feedback) button in the reaction menu. The bottom of the screen shows the Windows taskbar with various application icons and the system tray showing the time as 12:30 on 25.05.2020.

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Chat and Share Files



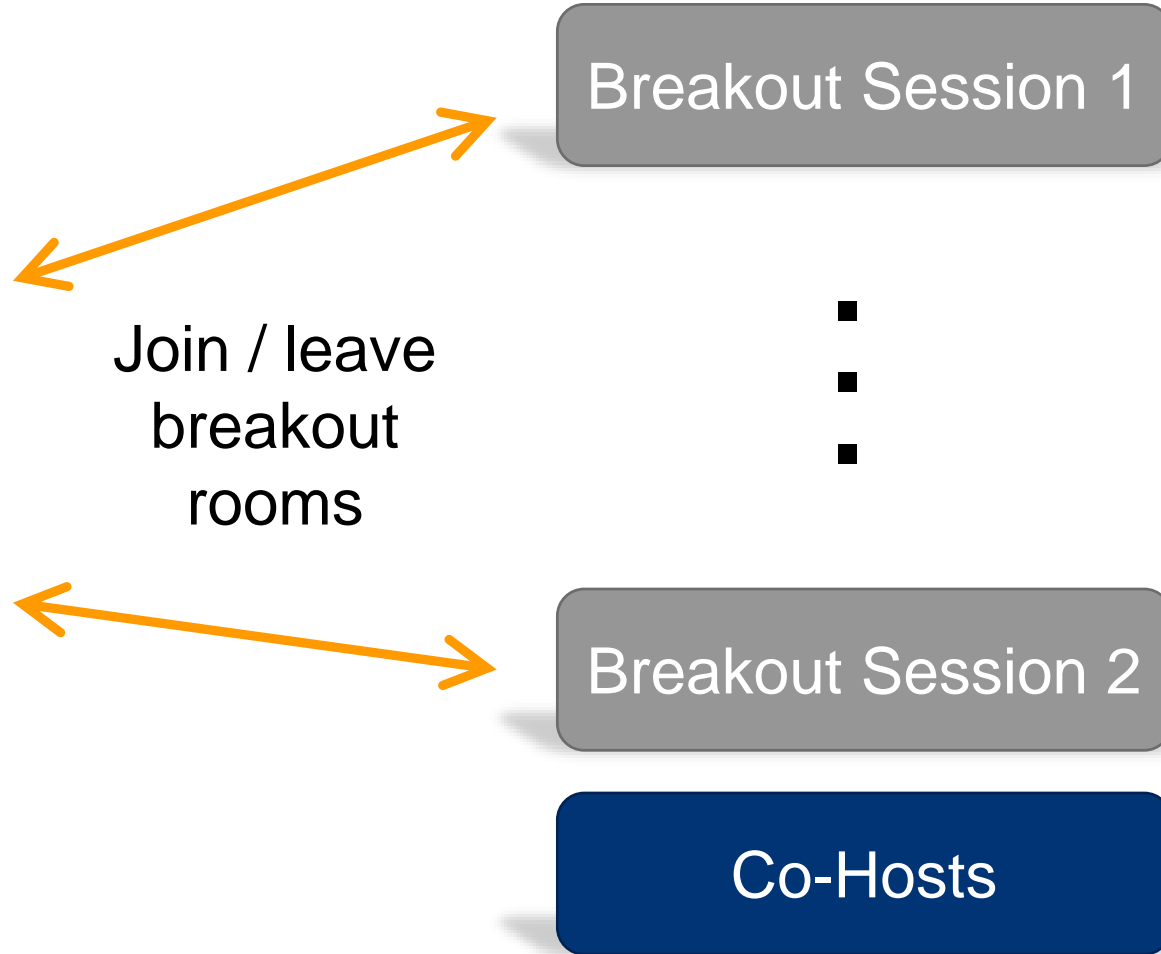
- Breakout rooms allow you to split your Zoom meeting in up to 50 separate sessions. The meeting host can choose to split the participants of the meeting into these separate sessions automatically or manually, and can switch between sessions at any time.
- We will have 3 Breakout Rooms:
 - Breakout Session 1
 - Breakout Session 2
 - Breakout Session 3
- Participants will be automatically assigned to one of these breakout rooms during the exercise sessions.



zoom Breakout Rooms



Join meeting



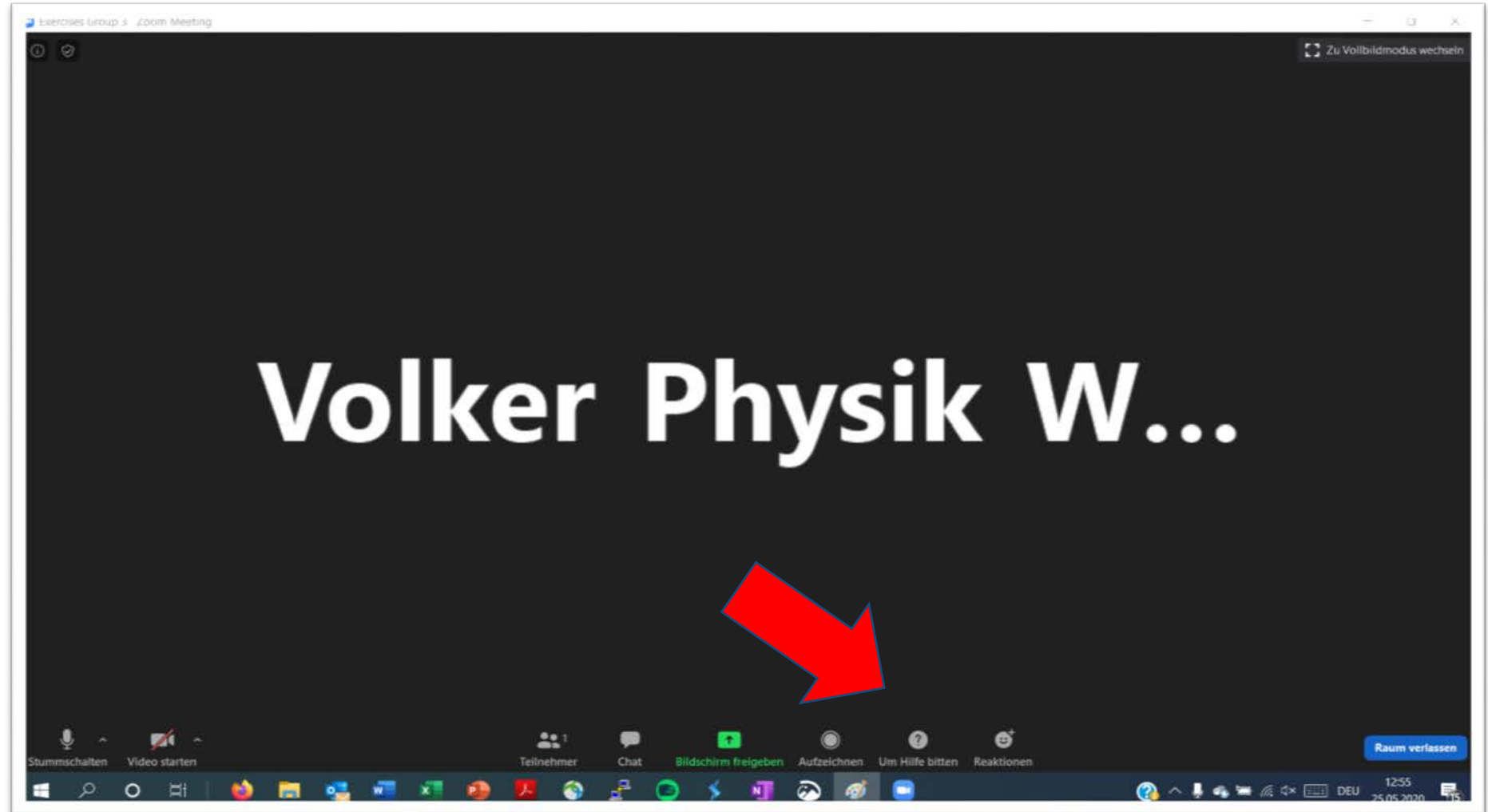
Jump between breakout rooms
(support staff only)



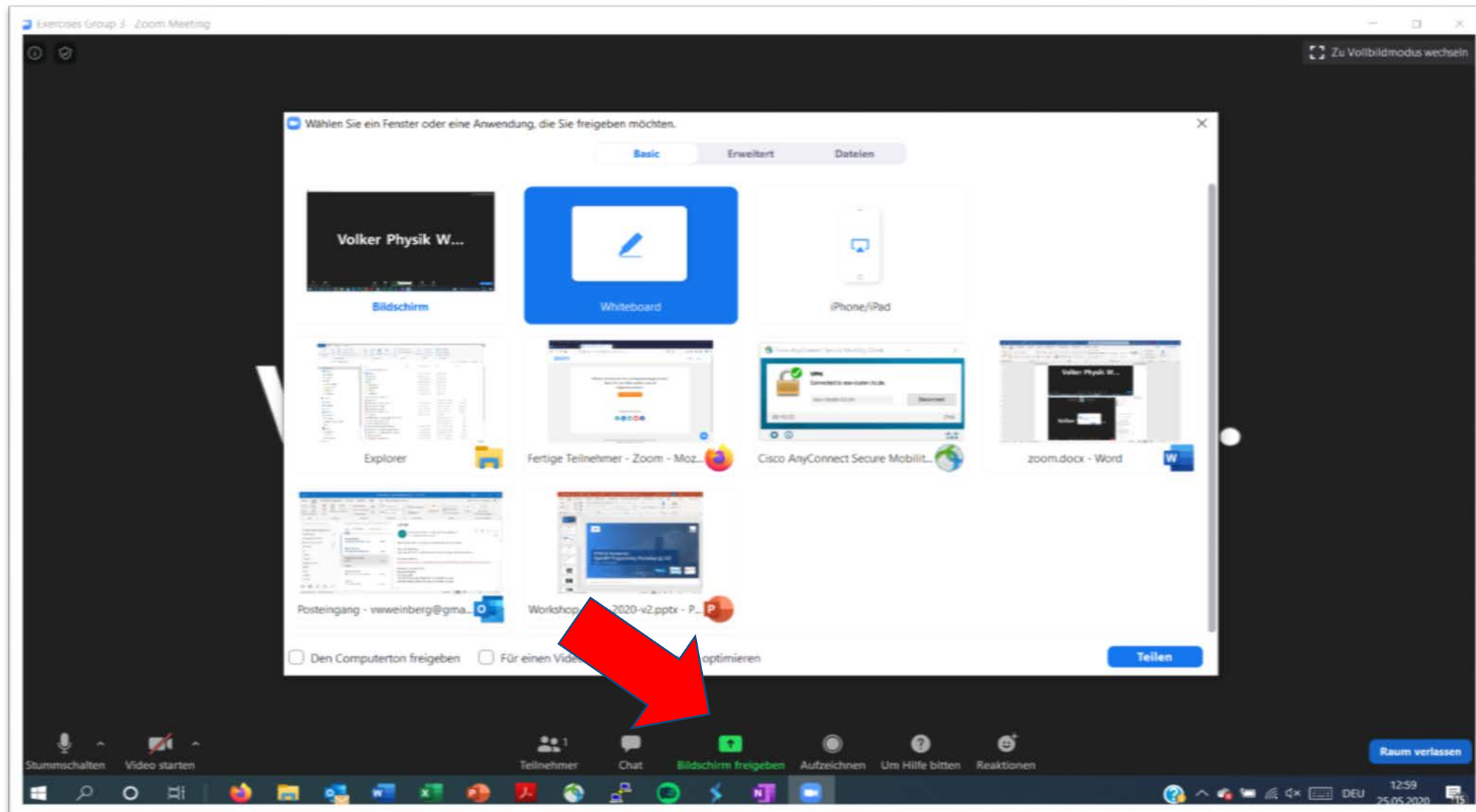
Breakout Rooms: Ask for help as a participant...



... if you are in a breakout room and your personal tutor is not available



... participants can share screens / whiteboard in breakout rooms per default



And now ...



Enjoy the workshop!