

27th VI-HPS Tuning Workshop

LRZ, Garching, Germany



23-27 April 2018

<http://www.vi-hps.org/training/tws/tw27.html>



IT4Innovations
national
supercomputing
center

27th VI-HPS Tuning Workshop (LRZ)

▪ **VI-HPS tools instructors**

- **Thomas Breuer & Ilya Zhukov** (Jülich Supercomputing Centre)
- **Michael Gerndt, Robert Mijakovic & Martin Schulz** (Technische Universität München)
- **Judit Giménez & Lau Mercadal** (Barcelona Supercomputing Center)
- **Emmanuel Oseret & Cédric Valensi** (Université de Versailles Saint-Quentin)
- **Joachim Protze** (RWTH Aachen University)
- **Sergei Shudler** (Technische Universität Darmstadt)
- **Sameer Shende** (University of Oregon)
- **Ronny Tschüter & Matthias Weber** (Technische Universität Dresden)
- **Josef Weidendorfer** (Leibniz-Rechenzentrum)

▪ **Local organisation**

- **Volker Weinberg, LRZ, Ondrej Jakl, IT4I, etc.**

▪ **Sponsors: PRACE & MEGWARE**

Outline

Monday 23 April

- 09:00 Welcome
 - **Introduction to VI-HPS and overview of tools** [Martin Schulz, TUM]
 - **Introduction to parallel performance engineering** [Josef Weidendorfer, LRZ]
 - **CooLMUC3 computer system and software environment** [Volker Weinberg, LRZ]
 - **Building & running NPB-MZ-MPI/BT-MZ on CooLMUC3** [Ilya Zhukov, JSC]
 - 10:30 (*break*)
 - 11:00
 - **mpiP performance profiler** [Martin Schulz, TUM]
 - **MAQAO performance analysis tools** [Cedric Valensi & Emmanuel Oseret, UVSQ]
 - 12:30 (*lunch*)
 - 13:30 Hands-on coaching to apply tools to your own code(s)
 - 17:30 Review of day and schedule for remainder of workshop
 - 18:00 (*adjourn*)
- Hands-on exercises part of each presentation to familiarise with tools every morning session
 - Hands-on coaching to apply tools to analyse and tune your own codes each afternoon

Outline of rest of week

Tuesday 24 April

- 09:00-10:30 **Score-P instrumentation & measurement** [Ronny Tschuter, TUDresden]
CUBE analysis report explorer [Ilya Zhukov, JSC]
- 11:00-12:30 **Score-P analysis scoring & measurement filtering** [Ronny Tschuter, TUDresden]
Extra-P automated performance modeling [Sergei Shudler, TUDarmstadt]

Wednesday 25 April

- 09:00-10:30 **Scalasca automated trace analysis** [Ilya Zhukov, JSC]
Vampir interactive trace analysis [Matthias Weber, TUDresden]
- 11:00-12:30 **Paraver/Extrac tracing tools suite** [Judit Giménez & Lau Mercadal, BSC]

Thursday 26 April

- 09:00-10:30 **JUBE workflow execution environment** [Thomas Breuer, JSC]
Periscope Tuning Framework [Robert Mijakovic, TUM]
- 11:00-12:30 **TAU performance system** [Sameer Shende, U. Oregon]

Friday 27 April

- 09:00-10:30 **MUST/ARCHER runtime error detection** [Joachim Protze, RWTH]
- 11:00-12:15 **kcachegrind cache analysis** [Josef Weidendorfer, LRZ]
- 12:15-12:30 Conclusion & Review

Other organisational dates

Tuesday 24 April

- 10:30 Group Picture (and break)
- 18:10 Bus leaving at LRZ main entrance for the social event
Guided tour of Weihenstephan Brewery and dinner
- 22:00 Bus leaving at Weihenstephan

Wednesday 25 April

- 15:00-16:30 Guided LRZ double-cube tour (Rainer Oesmann, Volker Weinberg)

Prepare to analyse your own application code(s)

- Ensure that your application code(s) build and run correctly to completion with appropriate datasets
 - initial configuration should ideally run in less than 15 minutes with 1-4 compute nodes
 - to facilitate rapid turnaround and quick experimentation
 - larger/longer scalability configurations are also interesting
 - turnaround may be limited due to busyness of batch queues, but perhaps overnight
- Compare your application performance on other computer systems
 - VI-HPS tools are already installed on many HPC systems
 - if not, ask your system administrator to install them (or install a personal copy yourself)