

41st VI-HPS Tuning Workshop

JSC, Germany, 07 - 11 February 2022 - Online

<http://www.vi-hps.org/training/tws/tw41.html>

Markus Geimer, Marc Schlütter & Brian Wylie
Jülich Supercomputing Centre

Robert Dietrich, Nicolas Poitoux & Felix Schmitt
NVIDIA

Bert Wesarg & Bill Williams
TU Dresden

Judit Giménez, German Llort & Lau Mercadal
Barcelona Supercomputing Center

Cédric Valensi
University of Versailles

Joachim Protze
RWTH Aachen

David Böhme
LLNL

Giuseppe Congiu
University of Tennessee

Sameer Shende
University of Oregon

VI-HPS Tuning Workshop = Tooling Workshop

- VI-HPS Tuning Workshops
 - overview of VI-HPS tools suite (plus guests)
 - explain functionality of individual tools and how to use them effectively
 - hands-on opportunity including expert coaching assistance using the tools
with your own parallel application code
- This workshop
 - specific focus on multi-node/multi-GPU parallel application performance analysis
 - use of quad-A100 nodes of JUWELS-Booster
- Selected upcoming JSC events
 - JUWELS Booster Tuning & Scaling Workshop (07-11 March 2022, online)
 - Helmholtz GPU Hackathon (21 & 29-31 March 2022, online & Berlin)
 - Parallel programming with MPI, OpenMP, OpenACC, CUDA, etc.

Agenda (Monday)

Time	Topic	Presenter
09:00	Welcome; The JUWELS-Booster system	Wyllie
	Introduction to VI-HPS & overview of tools	Valensi
	Introduction to parallel performance engineering	
	Building and running <i>TeaLeaf_CUDA</i> on JUWELS-Booster	Schlütter
10:30	<i>Break</i>	
11:00	MUST runtime error detection for MPI	Protze
12:30	<i>Lunch</i>	
14:00	Hands-on coaching to apply tools to analyze your own code(s)	
15:30	<i>Break</i>	
16:00	Caliper annotation, logging & profiling	Böhme
17:30	Review of day and schedule for remainder of workshop	
18:00	<i>Adjourn</i>	

Agenda (Tuesday)

Time	Topic	Presenter
09:00	Nsight Systems system-wide GPU performance analysis	Dietrich
	Compute Sanitizer CUDA functional correctness checking	Poitoux
10:30	<i>Break</i>	
11:00	Nsight Compute CUDA kernel profiler	Schmitt
12:30	<i>Lunch</i>	
14:00	Hands-on coaching to apply tools to analyze your own code(s)	
15:30	<i>Break</i>	
16:00	PAPI for CUDA & NVML	Congiu
17:30	Review of day and schedule for remainder of workshop	
18:00	<i>Adjourn</i>	

Agenda (Wednesday)

Time	Topic	Presenter
09:00	Score-P instrumentation & measurement	Schlütter
	CUBE profile explorer	
10:30	<i>Break</i>	
11:00	Score-P specialized instrumentation and measurement	Schlütter
12:30	<i>Lunch</i>	
14:00	Hands-on coaching to apply tools to analyze your own code(s)	
15:30	<i>Break</i>	
16:00	TAU performance system	Shende
17:30	Review of day and schedule for remainder of workshop	
18:00	<i>Adjourn</i>	

Agenda (Thursday)

Time	Topic	Presenter
09:00	Scalasca automated trace analysis	Geimer
	Vampir interactive trace analysis	Wesarg & Williams
10:30	<i>Break</i>	
11:00	BSC tracing tools suite (Paraver/Extrae)	Gimenez, Llort & Mercadal
12:30	<i>Lunch</i>	
14:00	Hands-on coaching to apply tools to analyze your own code(s)	
15:30	<i>Break</i>	
16:00	Hands-on coaching to apply tools to analyze your own code(s)	
17:30	Review of day and schedule for remainder of workshop	
18:00	<i>Adjourn</i>	

Agenda (Friday)

Time	Topic	Presenter
09:00	to be determined	
	Hands-on coaching to apply tools to analyze your own code(s)	
10:30	<i>Break</i>	
11:00	Hands-on coaching to apply tools to analyze your own code(s)	
12:30	<i>Lunch</i>	
14:00	Hands-on coaching to apply tools to analyze your own code(s)	
16:00	<i>End of workshop</i>	

Logistics

- Workshop presentations (linked from agenda)
 - <https://www.vi-hps.org/training/tws/tw41.html>
- Access to VI-HPS-TW41 project accounts/materials for hands-on/exercises
 - <https://judoor.fz-juelich.de/projects/join/training2123>
- JUWELS (Cluster + Booster) documentation
 - <https://apps.fz-juelich.de/jsc/hps/juwels/index.html>
- Presentations & video recordings from “Introduction to Supercomputing at JSC”
 - <https://fz-juelich.de/ias/jsc/2021/sc-2>