NHR FAU

FAU Friedrich-Alexander-Universität Erlangen-Nürnberg

Node-Level Performance Engineering

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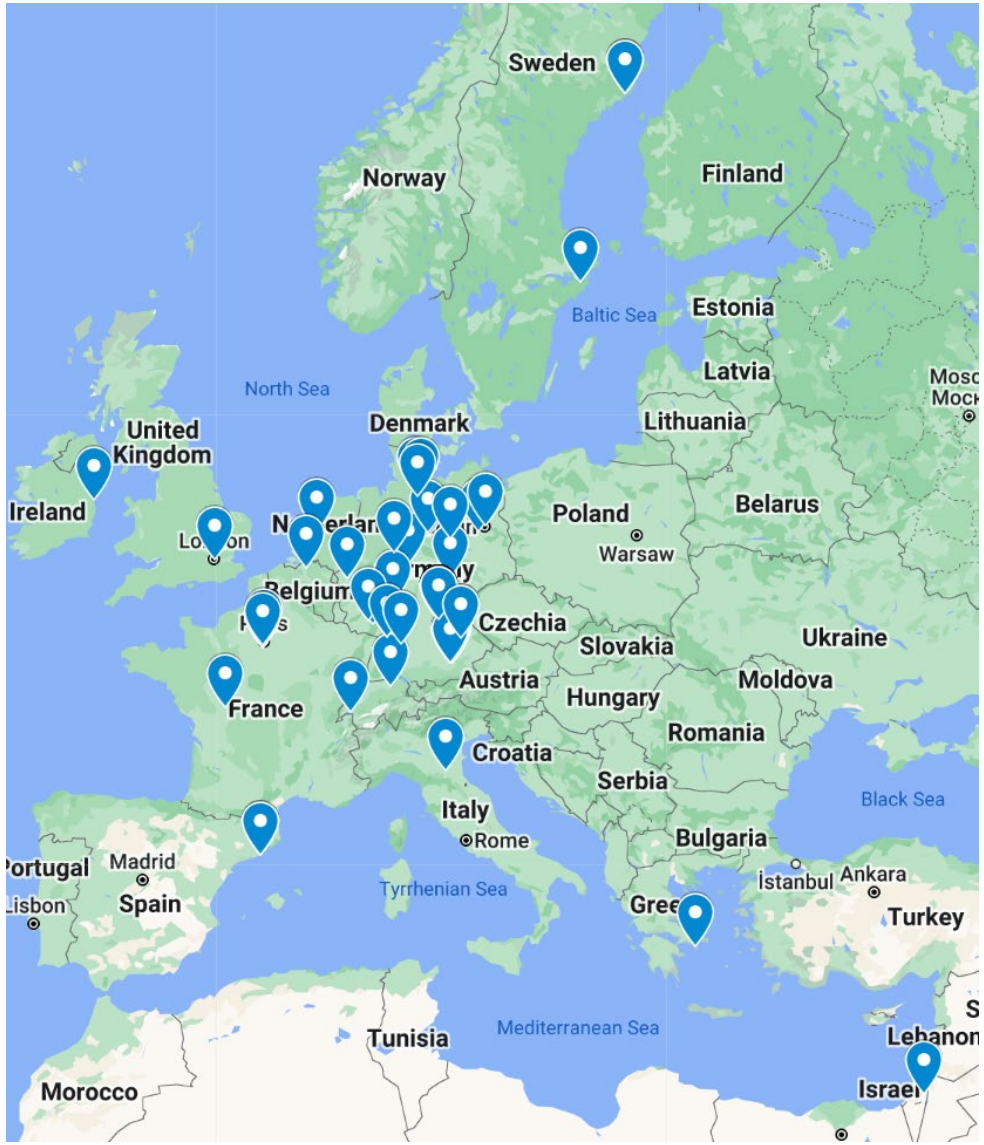
Erlangen National High Performance Computing Center (NHR@FAU)

Three-day online tutorial

December 5-7, 2022

http://tiny.cc/NLPE-LRZ

Welcome



PRACE

lrz

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Course schedule day 1

Time (CET)	Monday	Who?
9:00	Welcome – Intro	VW/GHa
9:30	Computer architecture for software developers (1)	GW
10:15	Coffee break	
10:30	Computer architecture for software developers (2)	GW
11:15	Hands-on: Divide benchmark	
11:45	Tools: Topology and affinity, frequency	GHa
12:15	Lunch Break	
13:15	Hands-On: topology, affinity	
14:00	Introduction to the Roofline Model	GW
15:00	Coffee break	
15:15	Tools: performance counters	GHa
16:00-	Quiz/Q&A/open end	

Course schedule day 2

Time (CET)	Tuesday	Who?
9:00	Roofline case study: Stencil smoothers	GW
10:00	Hands-on: performance counters and memory bandwidth	
11:00	Coffee break	
11:15	Performance Engineering: Basic skills	GHa
12:00	Hands-on: Dense matrix-vector multiplication (I)	
12:45	Lunch	
13:45	Optimal use of parallel resources: ccNUMA	GHa
14:30	Hands-on: Dense matrix-vector multiplication (II)	
15:00	Roofline case study: Tall & skinny matrix-matrix multiplication	GW
15:30	Coffee break	
15:45-	Quiz/Q&A/open end	

Course schedule day 3

Time (CET)	Wednesday	Who?
9:00	Optimal use of parallel resources: SIMD	GHa
10:00	Hands-on: MiniMD analysis	
11:00	Coffee break	
11:15	Roofline case study: Sparse matrix-vector multiplication	GW
12:30	Lunch	
13:30	Hands-on: Matrix-free CG solver	
14:45	Coffee break	
15:00	The ECM performance model	GHa
16:00-	Quiz/Q&A/open end	

Feedback

Please fill out the feedback survey

https://tinyurl.com/survey-hnpf1w22