



# Parallel Programming for Computational Engineering & Science

HPC Seminar

March 11-15, 2019



IT Center RWTH Aachen University, Kopernikusstraße 6, Seminar Room 3 + 4

	Shared Memory Programming		Message Passing		GPGPU Programming - Part I
	Part I: Basic OpenMP Programming	Part II: Advanced OpenMP Topics	Part I: Basic MPI Programming	Part II: Further MPI concepts	Part I: Basic GPGPU programming principles with OpenACC
	Mo, March 11	Tu, March 12	We, March 13	Th, March 14	Fr, March 15
9:00 - 10:30	<b>OpenMP Basics I</b> <i>Christian Terboven, RWTH</i>	<b>Getting OpenMP up to speed</b> <i>Ruud van der Pas/ Oracle</i>	<b>MPI Basics I + Lab I</b> <i>J. Protze / M.A. Hermanns, RWTH</i> Includes Lab Time	<b>Advanced MPI usage</b> <i>J. Protze / M.A. Hermanns, RWTH</i> Includes Lab Time	<b>Introduction to GPUs (Architecture &amp; General Concepts)</b> <b>OpenACC Basics I</b> <i>Sandra Wienke, RWTH</i>
10:30 - 11:00	coffee break	coffee break	coffee break	coffee break	coffee break
11:00 - 12:30	<b>OpenMP Basics II + OpenMP Lab I</b> <i>Christian Terboven, RWTH</i>	<b>OpenMP SIMD + OpenMP Lab IV</b> <i>Christian Terboven, RWTH</i>	<b>MPI Basics II + Lab II</b> <i>J. Protze / M.A. Hermanns, RWTH</i> Includes Lab Time	<b>Hybrid MPI + Threads Common Use Cases</b> <i>J. Protze / M.A. Hermanns RWTH</i> Includes Lab Time	<b>OpenACC Basics II</b> <b>OpenACC Lab I + II</b> <b>Comparison of OpenACC &amp; OpenMP target constructs</b> <i>Sandra Wienke, RWTH</i>
12:30 - 14:00	lunch break	lunch break	lunch break	lunch break	lunch break
14:00 - 15:30	<b>OpenMP Basics III + OpenMP Lab II</b> <i>Christian Terboven, RWTH</i>	<b>OpenMP Tasking Details</b> <i>Christian Terboven, RWTH</i>	<b>MPI Basics III + Lab III</b> <i>J. Protze / M.A. Hermanns, RWTH</i> Includes Lab Time	<b>MPI Performance Analysis Tools</b> - 35min, tba <b>MUST – MPI Correctness</b> 25 min, <i>J. Protze, RWTH</i> <b>Tools Lab</b> - 30 min	<b>GPGPU Programming -Part II: Advanced Concepts &amp; Tuning of GPGPUs with OpenACC</b> <b>Latency Hiding &amp; Occupancy OpenACC Lab III</b> <b>Launch Configuration &amp; Loop Schedules</b> <i>Sandra Wienke, RWTH</i>
15:30 - 16:00	coffee break	coffee break	coffee break	coffee break	coffee break
16:00 - 17:30	<b>Serial Performance</b> <i>Tim Cramer, RWTH</i> <b>+ OpenMP Lab III</b>	<b>OpenMP Lab V</b>	<b>Basic Tool Usage</b>	MPI Lab or Hands-On Session "Bring Your Own Code"	<b>Heterogeneous Computing OpenACC Lab IV</b> <i>Sandra Wienke, RWTH</i>
19:00 –		<b>Social Event in Palladion</b> (at your own expense)			