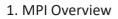
Iterative Linear Solvers & Parallelization @HLRS – 1st day

Content

MPI on beginners' level [Rolf Rabenseifner]



- 2. Process model and language bindings
- 3. Messages and point-to-point communication
- 4. Nonblocking communication

File: mpi_3.1_rab.pdf

14 59 14 13

<u>Schedule</u>

08:30 Local registration

09:00 Welcome

09:05 Lectures and exercises on MPI (including some breaks)

12:30 Lunch break

13:45 Lectures and exercises on MPI (including some breaks)

16:45 End

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[1] Slide 2

Iterative Linear Solvers & Parallelization @HLRS – 2nd day

Shared memory parallelization with Ope	nMP 08:45 Login to ZOOM
[Rolf Rabenseifner]	(and establishing the break-out rooms)
Overview	09:00 Lectures and exercises on OpenMP (including some breaks)
Execution model	12:30 Lunch break
Worksharing directives	13:45 Lectures and exercises on OpenMP (including some breaks)
Worksharing – continued (Exe 2b)	16:45 Final end
Data environment	
Summary	
Pitfalls	
Q&A	

File: openmp-intro13.pdf

Iterative Linear Solvers & Parallelization @HLRS – 3rd day

Content

Iterative Solvers for Large Linear Systems [Andreas Meister]

- 9:00 Introduction, Basics and Practicals (Lecture + Practicals)
- 10:00 Consistency and Convergence (Lecture)
- 11:00 Break
- 11:30 Jacobi Method (Lecture)
- 12:15 Practicals
- 13:00 Lunch
- 14:15 Gauß-Seidel Method (Lecture)
- 14:45 Practicals
- 15:15 Q+A
- 15:30 Break
- 15:45 MPI:
 - 6-(1) Collective Communication 🗋 🔁 🔂 😰
 - File: mpi_3.1_rab.pdf
- 16:45 End

<u>Schedule</u>

08:45 Local registration

- 09:00 Lectures & exercises on Iterative Solvers (including some breaks)
- 13:00 Lunch break [30 Minutes later!]
- 14:15 Lectures & exercises on Iterative Solvers (including some breaks)
- 15:30 Other options on MPI
- 16:45 Final end

Schedule

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Content

[1] Slide 4

Iterative Linear Solvers & Parallelization @HLRS – 4th day

08:45 Local registration **Iterative Solvers for Large Linear Systems** 09:00 Lectures & exercises on Iterative Solvers [Andreas Meister] (including some breaks) 12:00 Lunch break [30 Minutes earlier!] 9:00 Relaxation Schemes (Lecture) 13:15 Lectures & exercises on Iterative Solvers 10:00 Practicals (including some breaks) 10:45 Break 15:30 For MPI & OpenMP: Parallelization 11:00 Method of Steepest Descent (Lecture) 16:45 Final end 11:30 Practicals 12:00 Lunch 13:15 Method of Conjugate Gradients (Lecture) 14:15 Practicals 15:00 O+A 15:15 Break 15:30 MPI & OpenMP: Parallelization of Explicit and Implicit Solvers (talk) File: parallelization_rab.pdf 16:45 End

Iterative Linear Solvers & Parallelization @HLRS – 5th day

Content

Iterative Solvers for Large Linear Systems [Andreas Meister]

- 09:00 Introduction to Multigrid Methods (Lecture)
- 10:00 Practicals
- 10:30 Break
- 10:45 GMRES and BICG (Lecture)
- 11:45 Practicals
- 12:15 Lunch
- 13:30 Variants of BICG (Lecture)
- 14:00 Practicals
- 14:30 Preconditioning
- 15:30 Q+A
- 15:45 Break
- 16:00 MPI: 12. Derived datatypes (talk w/o practical)

(1) transfer any combination of typed data <u>File: mpi_3.1_rab.pdf</u>

16:30 Q+A / Feedback

16:45 End

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<u>Schedule</u>

08:45 Local registration

- 09:00 Lectures & exercises on Iterative Solvers (including some breaks)
- 12:15 Lunch break [15 Minutes earlier!]
- 13:30 Lectures & exercises on Iterative Solvers (including some breaks)
- 16:00 Other options on MPI
- 16:30 Feedback
- 16:45 Final end

[1] Slide 6