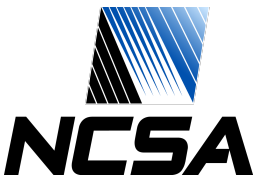
Joint Laboratory for Extreme Scale Computing

Your Workshop Guide



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WELCOME

Dear participants,

It is a great pleasure to welcome you at the ENS Lyon for the 5th JLESC Workshop, organized by Inria. More than 120 participants, coming from the six partner institutions of the Joint Laboratory for Extreme Scale Computing, and their collaborating universities, are attending this fifth workshop. This illustrates the effort of our joint laboratory to address today's high performance computing challenges.

The joint laboratory brings together researchers from the National Center for Supercomputing Applications and the University of Illinois at Urbana-Champaign (NCSA and UIUC, USA), Argonne National Laboratory (ANL, USA), the Barcelona Supercomputing Center (BSC, Spain), the Jülich Supercomputing Center (JSC, Germany), RIKEN Advanced Institute for Computational Science (RIKEN AICS, Japan), and the Institut National de Recherche en Informatique et en Automatique (INRIA, France).

We hope you have a very good time and fruitful exchanges in Lyon!

The organization team
Evelyne Blesle
Aurélien Cavelan
Hélène Coullon
Laetitia Lecot
Christian Perez
Yves Robert

MAP

The workshop begins at 2pm on Monday 27th of June. The first session (2pm-4:20pm) is plenary, and we need the large **Amphitheater located at ENS Descartes**. All following sessions (end of Monday, Tuesday and Wednesday) will take place at ENS Monod. A map is given in this guide, but we will return to ENS Monod all together after the first session.

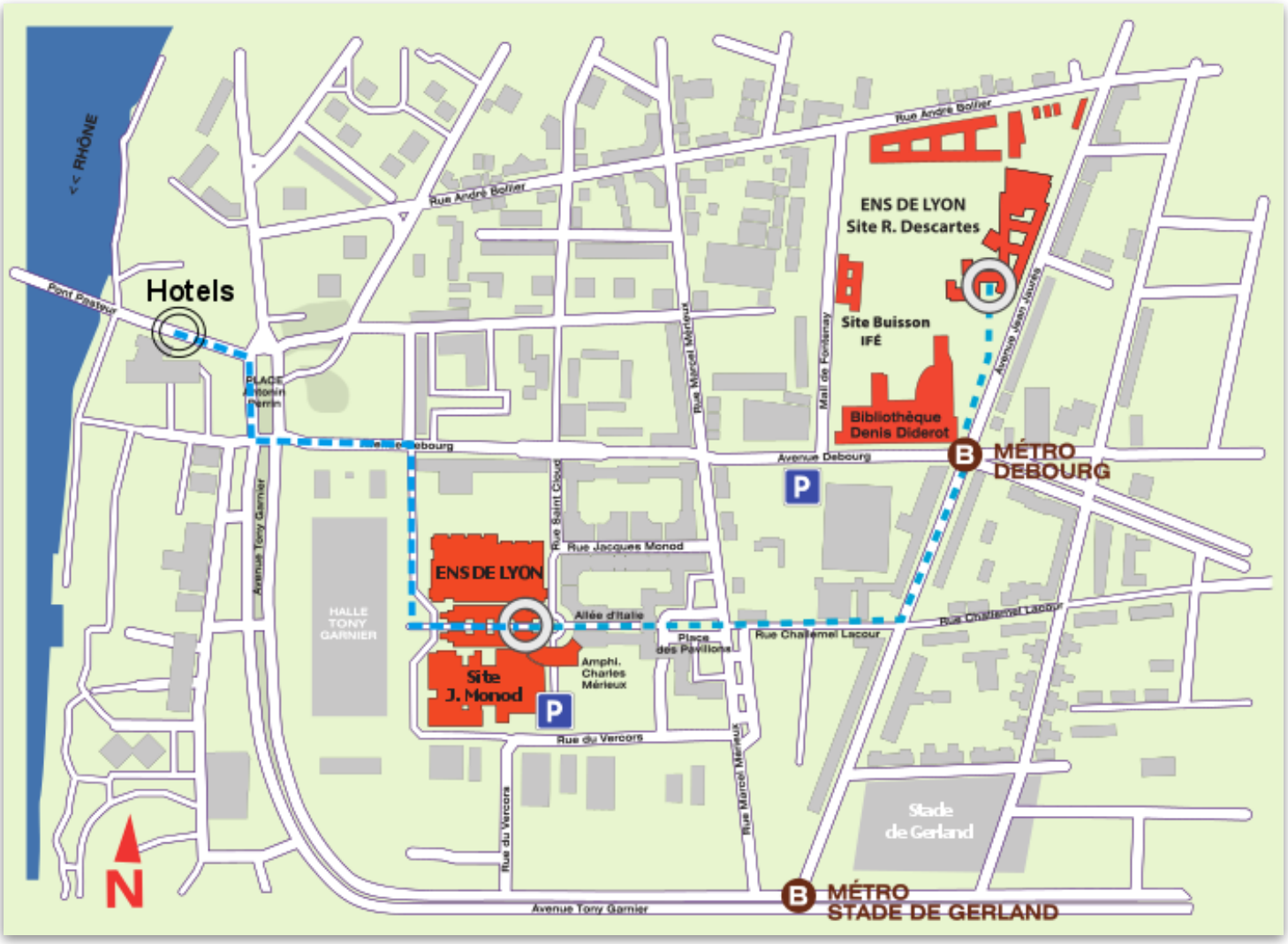
Registration also takes place at ENS Monod, 4:30pm-7pm.

Four different rooms will be available for the workshop at the 4th floor of the ENS Monod: *Amphitheater A*, *Amphitheater B*, *Room B1* and *Room B2*. Rooms will be indicated.

Breaks and **lunches** will be in front of the ***Amphitheater B*** (3dr floor of ENS Monod) and at the ***Passerelle room*** (4th floor of ENS Monod).

Monday and **Wednesday dinners** will be held at the **ENS Descartes**. A group departure is organized on **Monday at 6.30pm** from ENS Monod.

Hotels / ENS Monod / ENS Descartes



AGENDA

Abstracts of all talks and updated schedule are available on the JLESC website at https://jlesc.github.io/events/5th-jlesc-workshop/

Monday, June 27, 2016

Time	ENS Monod
09:30 - 12:00	**Steering committee and application meetings (by invitations)**

Time	Big Amphitheater (ENS Descartes)
14:00 - 15:10	**Welcome & News from the six partner institutions**
	Welcome: **Franck Cappello**, **Christian Perez**, **Yves Robert**
	News from INRIA: **Thierry Priol**
	News from UIUC/NCSA: **Ed Seidel**
	News from BSC: **Jesus Labarta**
	News from Riken: **Mitsuhisa Sato**
	News from JSC: **Thomas Lippert**
	News from ANL: **Paul Hovland**
15:10 - 15:20	**Break**
15:20 - 16:20	**Special session on JLESC applications - chair: Gabrielle Allen, ANL**
15:20	Lightning talk on application 1
15:30	Lightning talk on application 2
15:40	Lightning talk on application 3
15:50	Lightning talk on application 4
16:00	Lightning talk on application 5
16:10	Lightning talk on application 6
16:20 - 16:30	**Walking to ENS Monod**
16:30 - 17:00	**Registration (until 19:00) and Break** **In front of Amphitheater B - 3rd floor - and Passerelle room - 4th floor**
Time	**Amphitheater A and B and Rooms B1 and B2 (ENS Monod 4th floor)**
17:00 - 18:00	**Break-out Applications**
19:00	**Dinner (ENS Descartes - group departure at 18:30 from ENS Monod)**

Tuesday, June 28, 2016

Time 8:40 -09:00	Amphitheater A (Shifted from I/O, storage and in situ)	
08:40	**Project - Rob Ross (ANL)** From File Systems to Services: Changing the Data Management Model in HPC	
Time 9:00 -12:30	**Amphitheater A Programming models and runtime**	**Amphitheater B Numerical methods**
09:00	**Project - Sergi Mateo Bellido (BSC)** Improving hybrid MPI and OmpSs applications using Argobots	**Project - Toshiyuki Imamura (RIKEN)** HPC libraries for solving dense symmetric eigenvalue problems
09:20	**Project - Sanjay Kale (UIUC)** Overview of Charm++ and collaboration opportunities	**Project - David Haensel (JSC)** Implementing a task parallel FMM on top of Argobots
09:40	**Lightning - Hélène Coullon (INRIA)** The Multi-Stencil Language: orchestrating stencils with a mesh-agnostic DSL	**Project - Edoardo Di Napoli (JSC)** Application of the ChASE eigensolver to excitonic Hamiltonians
09:50	**Lightning - Alexandre Denis (INRIA)** Lightweight Kernel-Assisted Communication Progression	
10:00	**Lightning - Atsushi Hori (RIKEN)** A New Parallel Execution Model for Many-Core Architectures	**Project - Laurent Hascoet (INRIA)** Advancement report on the interfacing of OpenAD and Tapenade
10:10	**Lightning - Prasanna Balaprakash (ANL)** AutoMOMML: Automatic Multi-Objective Modeling with Machine Learning	
10:20	**Lightning - Marc Casas (BSC)** Leveraging the OmpSs + Charm++ Programming Model for Stencil computations	**Lightning - Paul Hovland (ANL)** Program Verification for Extreme-Scale Applications (ProVESA): motivation, overview, and math issues
10:30 -11:00	**Coffee break (in front of Amphitheater B - 3rd floor - and Passerelle room - 4th floor)**	
11:00	**Lightning - Sergi Mateo Bellido (BSC)** Domain Specific Languages on HPC systems	**Project - Emmanuel Agullo (INRIA)** Overview of Task-based Sparse and Data-sparse Solvers on Top of Runtime Systems and potential JLESC collaborations
11:10	**Lightning - Sangmin Seo (ANL)** BOLT: OpenMP over Lightweight Threads	
11:20	**Lightning - Samuel T. White (UIUC)** Adaptive MPI: Overview & Potential Collaborations	**Project - Amanda Bienz (UIUC)** Reducing Communication in Sparse Iterative and Direct Solvers
11:30	**Lightning - Luís F. G. Millani (INRIA)** Energy-Aware Autotuning for HPC Kernels	**Discussion**
11:40	**Lightning - Jorge Ejarque (BSC)** Executing COMPSs applications with Docker	
11:50 - 12:30	**Discussion**	
12:30 - 14:00	**Lunch (in front of Amphitheater B - 3rd floor - and Passerelle room - 4th floor)**	

Time 14:00 -17:00	Amphitheater A Resilience	Amphitheater B Performance tools
14:00	Project - **Leonardo Bautista Gomez (BSC)** New Techniques to Design Silent Data Corruption Detectors	Project - **Antonio J. Peña (BSC) and Lena Oden (ANL)** Data distribution approaches for heterogeneous memory systems
14:20	Project - **Aurélien Cavelan (INRIA)** Combining Checkpointing and Replication to Cope with Fail-Stop and Silent Errors	Project - **Hitoshi Murai (RIKEN)** Developer tools for porting and tuning parallel applications on extreme-scale parallel systems
14:40	Project - **Jon Calhoun (ANL)** Lossy Compression for HPC Checkpoint Restart: Mathematical Guidance for Error Tolerance Selection	Lightning - **Miwako Tsuji (RIKEN)** Simplified sustained performance benchmarks
		Lightning - **Brice Videau (INRIA)** Semi-Automatic Performance Optimization of HPC Kernels
15:00 - 15:30	Coffee break (3rd floor)	
15:30	Lightning - **Hongyang Sun (INRIA)** Optimal Multi-Level Checkpointing	Lightning - **Ronak Buch(UIUC)** Runtime and Hardware Assisted Performance Analysis
15:40	Lightning - **Pierre-Louis Guhur (ANL)** Detecting Silent Data Corruptions with Error Estimations in Numerical Integration Solvers	Lightning - **Tarun Prabhu (UIUC)** Moya: A JIT Compiler for HPC
15:50	Lightning - **Valentin Le Fèvre (INRIA)** A different re-execution speed can help	Lightning - **Judit Gimenez (BSC)** Analysing some Fiber Miniapps
16:00	Lightning - **Wolfgang Frings (JSC)** The new Buddy-Checkpointing Feature of SIONlib for Task-Local Parallel I/O Support	Lightning - **Wendy Sharples (JSC)** Striving for extreme scalability and big data capability using a novel flexible development, benchmarking and runcontrol framework
16:10	Lightning - **Leonardo Bautista Gomez (BSC)** Computing on Unprotected Memory : Opportunity for a world-wide collaboration	Lightning - **Olivier Richard (INRIA)** The BatSim simulator
16:20- 17:00	Discussion	Discussion
18:00	Bus to gala diner (departure from hotels)	

Wednesday, June 29, 2016

Time 09:00 -12:30	Amphitheater A I/O, storage and in situ	Amphitheater B Applications
09:00	Project - **Matthieu Dorier (ANL)** Evaluation of Topology-Aware Broadcast Algorithms for Dragonfly Networks	Project - **Andreas Lintermann (JSC) and Keiji Onishi (Riken)** Comparison of Meshing and CFD Methods for Accurate Flow Simulations on HPC systems
09:20	Project - **Matthieu Dreher (ANL)** Decaf : Building in situ applications without caffeine	Project - **Guillaume Houzeaux (BSC)** Dynamic load balancing with Pampa in Alya
09:40	Project - **Raphael Bleuse (INRIA)** Modeling and avoiding execution interferences	Lightning - **Guillaume Houzeaux (BSC)** Load balancing of an MPI parallel unstructured CFD code using DLB and OpenMP
09:50		Lightning - **Yoshifumi Nakamura (RIKEN)** Lattice QCD with CG and multi-shift CG on Xeon Phi
10:00	Lightning - **Pierre Matri (INRIA)** Týr: Blob Storage Systems Meet Built-In Transactions	Lightning - **Samuel Rodriguez (BSC)** Electromagnetic modeling for geophysical applications and HPC
10:10	Lightning - **Gabriel Antoniu (INRIA)** Spark versus Flink: Understanding Performance in Big Data Analytics Frameworks	Lightning - **Vincent Reverdy (UIUC)** Efficient Data Structures for Exascale Astrophysics
10:20	Lightning - **Andi Drebes (INRIA & U. Manchester)** Interactive Visualization and Analysis of Performance Anomalies: Crossing the Hardware, Run-Time and Application Layer for OpenStream and OpenMP	Lightning - **Hiroya Suno (RIKEN)** Eigenspectrum calculation of large sparse non-Herimitian matrices in lattice QCD
10:30 - 11:00	Coffee break (in front of Amphitheater B - 3rd floor - and Passerelle room - 4th floor)	
11:00	Lightning - **Arnaud Legrand (INRIA)** Analysis and Visualization of Dynamic Runtime Traces for the Scheduling Researcher	Lightning - **Thorsten Hater (JSC)** Accelerating LBM & LQCD Application Kernels by In-Memory Processing
11:10	Lightning - **Kate Keahey (ANL)** Combining On-Demand Availability and Batch Scheduling in HPC Datacenters	Lightning - **Fabian Gasper (JSC)** Using the fully coupled TerrSysMP in quasi-operational forecast mode on JSC/JURECA
11:20	Lightning - **Jens Henrik Göbbert(JSC)** Lowering the barriers to In-Situ Visualization	Lightning - **Paul M. Ricker (UIUC)** Using Accelerator Hardware to Improve Subresolution Modeling in Astrophysical Simulations
11:30 - 12:30	Discussion	Discussion
12:30	Lunch (in front of Amphitheater B - 3rd floor - and Passerelle room - 4th floor)	

Time 14:00 -17:00	Amphitheater A I/O, storage and in situ	Amphitheater B Clouds and new architectures
14:00	Lightning - **Rob Sisneros (UIUC)** A Data + Visual Analytics Approach to Understanding Parallel I/O	Project - **Franck Cappello (ANL)** OFPGA: OpenMP for FPGA
14:10	Lightning - **Tatiana Martsinkevich (Riken)** NetCDF-based I/O Middleware for Supporting Direct Data Transfer	
14:20	Lightning - **Franck Cappello (ANL)** Improving lossy compression for scientific data	Project - **Salman Habib (ANL) and Katrin Heitmann (ANL)** On-Demand Data Analytics and Storage for Extreme-Scale Simulations and Experiments
14:30	Lightning - **Kate Keahey (ANL)** Combining On-Demand Availability and Batch Scheduling in HPC Datacenters	
14:40	Lightning - **Salem El Sayed (JSC)** Characterising I/O behavior of a large set of applications using file system performance counters	Lightning - **Amelie Chi Zhou (INRIA)** Incorporating Probabilistic Optimizations for Resource Provisioning of Cloud Workflow Processing
14:50	Lightning - **Shinichiro Takizawa (RIKEN)** Locality-aware Task Scheduling in a Message Passing and MapReduce Hybrid Model	Lightning - **Luis Pineda (INRIA)** Exploring elastic scaling on Chameleon Cloud
15:00 - 15:30	Coffee brea (in front of Amphitheater B - 3rd floor - and Passerelle room - 4th floor)	
15:30	Discussion	Lightning - **Georgios Christodoulis (INRIA)** Adaptation of a HPC system to FPGA
15:40		Lightning - **Carlos Alvarez (BSC)** OmpSs FPGA support
15:50		Lightning - **Carl Pearson (UIUC)** ASAP On CAPI: Intro to IBM CAPI and Computational Genomics Case Study
16:00 - 16:40		Discussion
16:45 - 17:00	Closing session and presentation of the next workshop	
19:00	Dinner (ENS Descartes)	

SOCIAL EVENT

For those of you who have registered for the social event, Tuesday dinner will be held at the restaurant of the famous chief **Paul Bocuse**. The bus will wait at **6.00pm** for a departure at 6.30pm, from **Hotels** (indicated on the map).

The bus will return to Lyon around 11pm. **Three stops** will be available:

- City center of Lyon, **metro A Cordelier**
- **Hotels**
- **ENS Monod**

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Look for a red dot on our badges to find our staff members !

WiFi access

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Password : nqBRMCTM