

5th LESC Workshop

June 27-29 2016

Joint Laboratory for Extreme Scale Computing

Your Workshop Guide



WiFi access**Network: « invites »****Login: z446763****Password: nqBRMCTM****Contact****Tel: +33 4 72 72 84 58 and + 33 4 72 72 88 17****Emails: helene.coullon@inria.fr, aurelien.cavelan@inria.fr**

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.

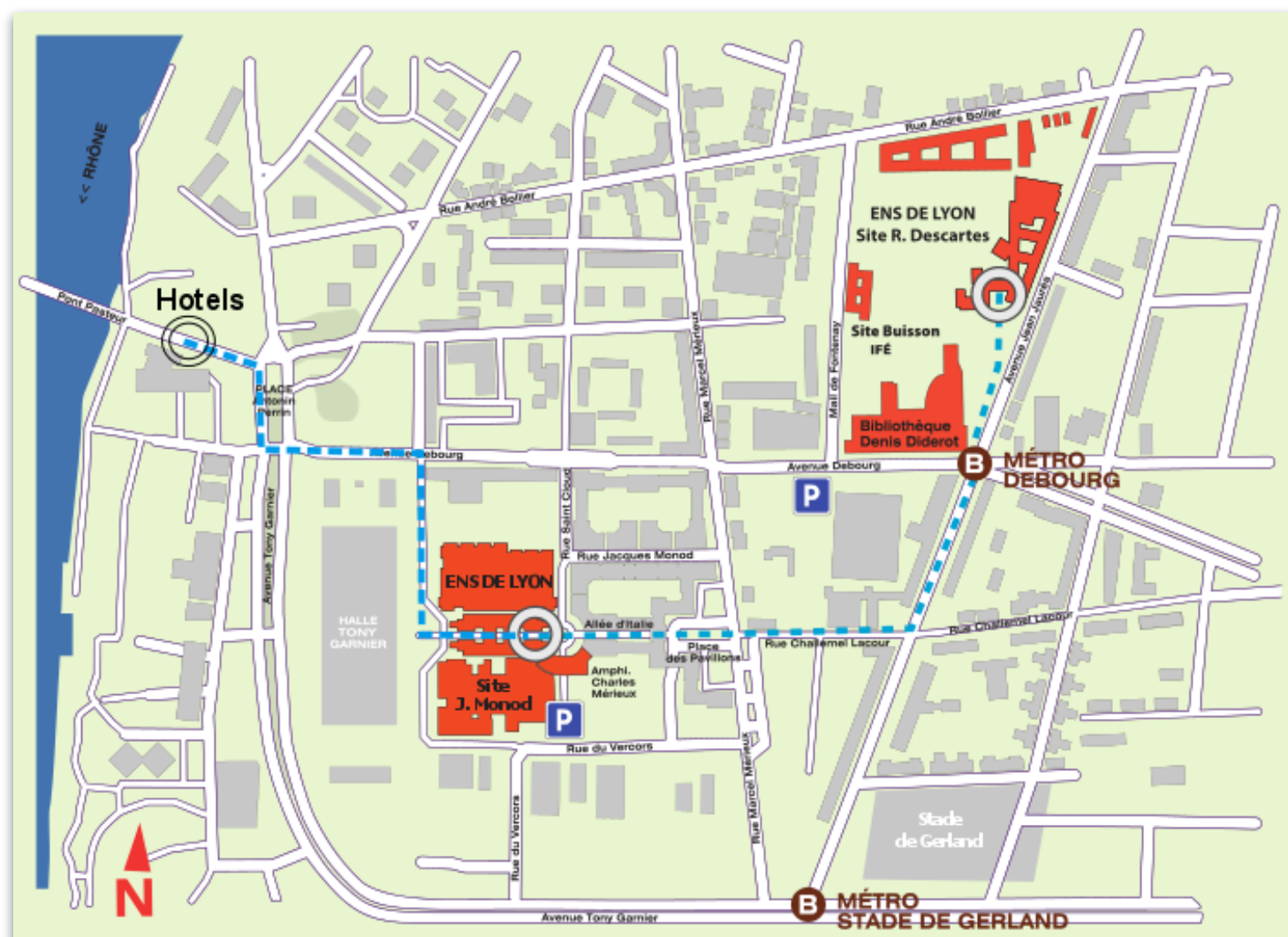
Registration also takes place at ENS Monod, 4:30pm-7pm.

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 (2nd floor, Salle Conseil)	ENS Monod (4th floor, Room B1)
08:45	Steering committee meeting (by invitations)	
09:30 - 12:00		Application meeting (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: Mitsuhsa 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	
11:40	Discussion	Lightning - Fabian Gasper (JSC) Using the fully coupled TerrSysMP in quasi-operational forecast mode on JSC/JURECA
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) When Amdahl Meets Young/Daly	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 and 4th 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	Lightning - Omer Subasi (BSC) Programmer-directed Partial Replication for Fault-tolerant HPC Applications	
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) Tyr: Blob Storage Systems Meet Built-In Transactions	Lightning - Samuel Rodriguez (BSC) Memory-efficient sparse direct solvers in large-scale frequency- domain geophysical simulations
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-Hermitian 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 - Paul M. Ricker (UIUC) Using Accelerator Hardware to Improve Subresolution Modeling in Astrophysical Simulations
11:20	Lightning - Jens Henrik Göbbert(JSC) Lowering the barriers to In-Situ Visualization	Discussion
11:30 - 12:30	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 - Salem El Sayed (JSC) Characterising I/O behavior of a large set of applications using file system performance counters	
14:40	Lightning - Shinichiro Takizawa (RIKEN) Locality-aware Task Scheduling in a Message Passing and MapReduce Hybrid Model	Lightning - Amelie Chi Zhou (INRIA) Incorporating Probabilistic Optimizations for Resource Provisioning of Cloud Workflow Processing
14:50		Lightning - Luis Pineda (INRIA) Exploring elastic scaling on Chameleon Cloud
15:00 - 15:30	Coffee break (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		Lightning - Jorge Ejarque (BSC) Executing COMPSs applications with Docker
16:10 - 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 chef **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**

PARTICIPANTS

Name	Firstname	Email	Institution
Agullo	Emmanuel	Emmanuel.Agullo@inria.fr	INRIA
Allen	Gabrielle	gdallen@illinois.edu	UNIV. OF ILLINOIS / NCSA
Alvarez	Carlos	calvarez@ac.upc.edu	BSC
Antoniou	Gabriel	gabriel.antoniou@inria.fr	INRIA
Aupy	Guillaume	guillaume.aupy@vanderbilt.edu	VANDERBILT UNIVERSITY
Badia	Rosa	rosa.m.badia@bsc.es	BSC
Balaprakash	Prasanna	pbalapra@anl.gov	ANL
Barcelo	Alex	alex.barcelo@bsc.es	BSC
Bautista-Gomez	Leonardo	leonardo.bautista@bsc.es	BSC
Benoit	Anne	anne.benoit@ens-lyon.fr	INRIA
Bienz	Amanda	bienz2@illinois.edu	UNIVERSITY OF ILLINOIS / NCSA
Bleuse	Raphael	Raphael.Bleuse@inria.fr	INRIA
Borrell	Ricard	ricardborrell@hotmail.com	BSC
Buch	Ronak	rabuch2@illinois.edu	UNIVERSITY OF ILLINOIS / NCSA
Calhoun	Jon	jccalho2@illinois.edu	UIUC
cappello	Franck	cappello@anl.gov	ANL
Casas	Marc	marc.casas@bsc.es	BSC
Cavelan	Aurelien	aurelien.cavelan@ens-lyon.fr	INRIA
Cela	Jose M.	josem.cela@bsc.es	BSC
Christodoulis	Georgios	georgios.christodoulis@inria.fr	INRIA
Cortes	Toni	toni.cortes@bsc.es	BSC
Coulaud	Olivier	Olivier.Coulaud@inria.fr	INRIA
Coullon	Helene	helene.coullon@inria.fr	INRIA
Croubois	Hadrien	hadrien.croubois@ens-lyon.fr	INRIA
Darte	Alain	Alain.Darte@ens-lyon.fr	ENS LYON
De Souza Bento Da Silva	Pedro Paulo	pedro.silva@inria.fr	INRIA
Denis	Alexandre	Alexandre.Denis@inria.fr	INRIA
Desprez	Frederic	frederic.desprez@inria.fr	INRIA
Di Napoli	Edoardo	e.di.napoli@fz-juelich.de	JSC

Name	Firstname	Email	Institution
Diaz	Julien	julien.diaz@inria.fr	INRIA
Dorier	Matthieu	mdorier@anl.gov	ANL
Drebes	Andi	webmaster@programmierforen.de	INRIA
Dreher	Matthieu	mdreher@anl.gov	ANL
Dumont	Thierry	tdumont@math.univ-lyon1.fr	UNIVERSITY OF LYON 1
Ejarque	Jorge	jorge.ejarque@bsc.es	BSC
El Sayed	Salem	s.el.sayed.mohamed@fz-juelich.de	JSC
Feautrier	Paul	Paul.Feautrier@ens-lyon.fr	ENS LYON
Freitas	Henrique	cota@pucminas.br	INRIA
Frings	Wolfgang	W.Frings@fz-juelich.de	JSC
Fujita	Kohei	kohei.fujita@riken.jp	RIKEN AICS
Garcia De Gonzalo	Simon	grcdgnz2@illinois.edu	UNIVERSITY OF ILLINOIS / NCSA
Gasper	Fabian	f.gasper@fz-juelich.de	JSC
Geimer	Markus	m.geimer@fz-juelich.de	JSC
Gimenez	Judit	judit@bsc.es	BSC
Goebbert	Jens Henrik	j.goebbert@fz-juelich.de	JSC
Gropp	William	wgropp@illinois.edu	UNIVERSITY OF ILLINOIS / NCSA
Guhur	Pierre-Louis	pierre-louis.guhur@laposte.net	ANL
Gutheil	Inge	i.gutheil@fz-juelich.de	JSC
Habib	Salman	habib@anl.gov	ANL
Haensel	David	d.haensel@fz-juelich.de	JSC
Hagemeier	Bjoern	b.hagemeier@fz-juelich.de	JSC
Hascoet	Laurent	Laurent.Hascoet@sophia.inria.fr	INRIA
Hater	Thorsten	t.hater@fz-juelich.de	JSC
Heitmann	Katrin	heitmann@anl.gov	ANL
Hirao	Kimihiko	hirao@riken.jp	RIKEN AICS
Hori	Atsushi	ahori@riken.jp	RIKEN AICS
Houzeaux	Guillaume	guillaume.houzeaux@bsc.es	BSC
Hovland	Paul	hovland@anl.gov	ANL
Huard	Guillaume	guillaume.huard@imag.fr	INRIA
Imamura	Toshiyuki	imamura.toshiyuki@riken.jp	RIKEN AICS
Ishikawa	Yutaka	yutaka.ishikawa@riken.jp	RIKEN AICS
Kale	Laxmikant	kale@illinois.edu	UNIVERSITY OF ILLINOIS / NCSA

Name	Firstname	Email	Institution
Keahey	Kate	keahey@anl.gov	ANL
Kramer	William	wtkramer@illinois.edu	UNIVERSITY OF ILLINOIS / NCSA
Kumahata	Kiyoshi	kuma@riken.jp	RIKEN AICS
Labarta	Jesus	nuria.sirvent@bsc.es	BSC
Le Fèvre	Valentin	valentin.le-fevre@ens-lyon.fr	INRIA
Lee	Jinpil	jinpil.lee@riken.jp	RIKEN AICS
Lefevre	Laurent	laurent.lefevre@inria.fr	INRIA
Legrand	Arnaud	arnaud.legrand@imag.fr	INRIA
Lintermann	Andreas	A.Lintermann@fz-juelich.de	JSC
Lippert	Thomas	th.lippert@fz-juelich.de	JSC
Louvet	Violaine	louvet@math.univ-lyon1.fr	UNIVERSITY OF LYON 1
Martsinkevich	Tatiana	tanya.manekineko@gmail.com	RIKEN AICS
Maruyama	Naoya	nmaruyama@riken.jp	RIKEN AICS
Mateo	Sergi	sergi.mateo@bsc.es	BSC
Matri	Pierre	pierre.matri@inria.fr	INRIA
Mehaut	Jean-Francois	Jean-Francois.Mehaut@imag.fr	INRIA
Mohr	Bernd	b.mohr@fz-juelich.de	JSC
Mouton	Claire	claire.mouton@creatis.insa-lyon.fr	INSA
Murai	Hitoshi	h-murai@riken.jp	RIKEN AICS
Nakamura	Yoshifumi	nakamura@riken.jp	RIKEN AICS
Nakao	Masahiro	masahiro.nakao@riken.jp	RIKEN AICS
Narayanan	Sri Hari Krishna	snarayan@mcs.anl.gov	ANL
Oden	Lena	loden@anl.gov	ANL
Onishi	Keiji	keiji.onishi@riken.jp	RIKEN AICS
Palkovic	Martin	martin.palkovic@vsb.cz	IT4I NSC/VSB-TU OSTRAVA
Pearson	Carl	pearson@illinois.edu	UNIVERSITY OF ILLINOIS / NCSA
Pena	Antonio	antonio.pena@bsc.es	BSC
Perez	Christian	christian.perez@inria.fr	INRIA
Peterka	Tom	tpeterka@mcs.anl.gov	ANL
Pineda Morales	Luis	luis.pineda-morales@inria.fr	INRIA
Poole	Scott	mspoole@illinois.edu	UNIVERSITY OF ILLINOIS / NCSA
Pouilloux	Laurent	laurent.pouilloux@ec-lyon.fr	ECOLE CENTRALE LYON

Name	Firstname	Email	Institution
Prabhu	Tarun	tprabhu2@illinois.edu	UNIVERSITY OF ILLINOIS / NCSA
Raffin	Bruno	bruno.raffin@inria.fr	INRIA
Rais	Issam	issam.rais@inria.fr	INRIA
Reverdy	Vincent	vince.rev@gmail.com	UNIVERSITY OF ILLINOIS / NCSA
Richard	Jérôme	jerome.richard@inria.fr	INRIA
Richard	Olivier	olivier.richard@imag.fr	INRIA
Ricker	Paul	pmricker@illinois.edu	UNIVERSITY OF ILLINOIS / NCSA
Robert	Yves	yves.robert@ens-lyon.fr	INRIA
Rodriguez	Samuel	samuel.rodriguez@bsc.es	BSC
Roman	Jean	jean.roman@inria.fr	INRIA
Ropars	Thomas	thomas.ropars@imag.fr	INRIA
Ross	Rob	rross@mcs.anl.gov	ANL
Sakai	Yasuhiro	yasuhiro.sakai.gv@riken.jp	RIKEN AICS
Sasaki	Hisako	hisako.sasaki@riken.jp	RIKEN AICS
Sato	Mitsuhisa	msato@riken.jp	RIKEN AICS
Seidel	H. Edward	eseidel@ncsa.illinois.edu	UNIVERSITY OF ILLINOIS / NCSA
Seo	Sangmin	sseo@anl.gov	ANL
Sharples	Wendy	w.sharples@fz-juelich.de	JSC
Sisneros	Robert	sisneros@illinois.edu	UNIVERSITY OF ILLINOIS / NCSA
Speck	Robert	r.speck@fz-juelich.de	JSC
Subasi	Omer	omer.subasi@bsc.es	BSC
Sun	Hongyang	hongyang.sun@ens-lyon.fr	INRIA
Suno	Hiroya	suno@riken.jp	RIKEN AICS
Takizawa	Shinichiro	shinichiro.takizawa@riken.jp	RIKEN AICS
Tsuji	Miwako	miwako.tsuji@riken.jp	RIKEN AICS
Vazquez	Mariano	mariano.vazquez@bsc.es	BSC
Videau	Brice	brice.videau@imag.fr	INRIA
Vivien	Frederic	Frederic.Vivien@inria.fr	INRIA
White	Sam	white67@illinois.edu	UNIVERSITY OF ILLINOIS / NCSA
Yuki	Tomofumi	Tomofumi.Yuki@ens-lyon.fr	ENS LYON
Zhou	Amelie Chi	amelie.czhou@gmail.com	INRIA

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



WiFi access

Network : « invites »

Login : z446763

Password : nqBRMCTM