

<b>Argonne Training Program on Extreme Scale Computing</b>		
<b>Pheasant Run Resort/Gallery Hall/Rembrandt Room - St. Charles, IL</b>		
<b>August 3 through August 15, 2014</b>		
<b>Sunday August 3</b>		
2:00 PM	On-Site Check-in Gallery Hall Entrance	
4:00	Intro to ATPESC	Paul Messina/ANL
4:30	A Crash Course on Logging into ALCF Systems and Running Simple Jobs	Ray Loy/ANL
5:30	Dinner Talk: <i>"Title Forthcoming"</i>	Paul Messina/ANL - Program Director
6:30	Participant Introductions	All Participants
9:30	Wrap-up	
<b>Monday August 4</b>		
7:30 AM	Continental Breakfast	
	<b>Hardware Architectures session</b>	
8:30	Welcome and Overview to Architecture session	Pete Beckman/ANL
8:45	Computer Architecture and Structured Parallel Programming	James Reinders/Intel
10:00	Break	
10:30	Vectorization (SIMD) and Scaling (TBB and OpenMP)	James Reinders/Intel
11:15	A Performance Tuning Methodology: From the System Down to the Hardware -- Introduction	Jackson Marusarz/Intel
12:00 PM	Lunch and Hands-on Exercises	
1:15	A Performance Tuning Methodology: From the System Down to the Hardware -- Diving Deeper with Examples	Jackson Marusarz/Intel
2:45	Architecture of the IBM BG/Q and Programming Considerations	Scott Parker/ANL
3:15	Break	
3:45	Interconnects and Architectural Impacts	Torsten Hoefler/ETH
	<b>Programming Models and Languages session</b>	
4:30	MPI for Scalable Computing	Bill Gropp/UIUC, Rusty Lusk and Rajeev Thakur/ANL
5:30	Dinner Talk: <i>"Exascale Architecture Trends"</i>	Pete Beckman/ANL - Invited Speaker
6:30	Hands-on Exercises	
9:30	Wrap-up	
<b>Tuesday August 5</b>		
7:30 AM	Continental Breakfast	
8:30	MPI for Scalable Computing (continued from August 4)	Bill Gropp/UIUC, Rusty Lusk and Rajeev Thakur/ANL
10:00	Break	
10:30	MPI for Scalable Computing (continued)	Bill Gropp/UIUC, Rusty Lusk and Rajeev Thakur/ANL
12:00 PM	Lunch and Hands-on Exercises	
1:00	MPI for Scalable Computing (continued)	Bill Gropp/UIUC, Rusty Lusk and Rajeev Thakur/ANL
3:00	Break	
3:30	MPI for Scalable Computing (continued)	Bill Gropp/UIUC, Rusty Lusk and Rajeev Thakur/ANL
5:30	Dinner talk: <i>"Computational Urban Sciences"</i>	Charlie Catlett/ANL and Univerisity of Chicago - Invited Speaker
6:30	MPI Hands-on Exercises	Bill Gropp/UIUC, Rusty Lusk and Rajeev Thakur/ANL
9:30	Wrap-up	

<b>Wednesday August 6</b>		
7:30 AM	Continental Breakfast	
8:30	OpenMP	Barbara Chapman/U. Houston, Kelvin Li/IBM
10:00	Break	
10:30	OpenMP (continued)	Barbara Chapman/U. Houston, Kelvin Li/IBM
12:00 PM	Lunch and Hands-on Exercises	
1:00	Hybrid Programming	Bill Gropp/UIUC
2:00	OpenMP/Hybrid Programming	Barbara Chapman/U. Houston, Kelvin Li/IBM
3:00	Break	
3:30	OpenMP/Hybrid Programming	Barbara Chapman/U. Houston, Kelvin Li/IBM
5:30	<i>Dinner talk: "Computational Challenges for Large-scale Genomics Analysis and Systems Biology"</i>	<i>Rick Stevens/ANL - Invited Speaker</i>
6:30	OpenMP/Hybrid Programming Hands-on Exercises	Barbara Chapman/U. Houston, Kelvin Li/IBM
9:30	Wrap-up	
<b>Thursday August 7</b>		
7:30 AM	Continental Breakfast	
8:30	Accelerators	Tim Warburton/Rice University
10:00	Break	
10:30	Accelerators (continued)	Tim Warburton/Rice University
12:00 PM	Lunch and Hands-on Exercises	
1:00	Using OpenACC to Port Applications to Accelerators	John Levesque/Cray, Inc.
2:00	Chapel: Productive, Multiresolution Parallel Programming	Brad Chamberlain/Cray, Inc.
3:00	Break	
3:30	Charm++	Sanjay Kale/UIUC
4:30	UPC	Kathy Yelick/LBNL and UC Berkeley
5:30	<i>Dinner Talk: "The Big Gift of Big Data"</i>	<i>Valerio Pascucci/University of Utah - Invited Speaker</i>
6:30	ADLB	Rusty Lusk/ANL
7:00	Chapel and other Hands-on Exercises	
9:30	Wrap-up	
<b>Friday August 8</b>		
7:30 AM	Continental Breakfast	
	<b><i>Numerical Algorithms and FASTMath session</i></b>	
8:30	Algorithmic Adaptations to Extreme Scale	David Keyes/King Abdullah Univ. of Science and Technology
9:30	Communication-Avoiding Algorithms for Linear Algebra and Beyond	Jim Demmel/UC Berkeley
10:30	Break	
11:00	FASTMath: An Overview of Mathematical Algorithms and Software	Lori Diachin/LLNL
11:40	Algebraic Solvers in FASTMath: An Introduction	Barry Smith/ANL
12:00 PM	Lunch and Hands-on Exercises	
1:00	PETSc: Portable, Extensible Toolkit for Scientific Computing	Barry Smith/ANL
2:00	HYPRE: High Performance Preconditioners	Rob Falgout/LLNL
2:30	Break	
3:00	SuperLU: Parallel Direct Solvers	Xiaoye (Sherry) Li/LBNL
3:30	SUNDIALS: Suite of Nonlinear and Differential/Algebraic Equation Solvers	Carol Woodward/LLNL
4:00	Introduction to Unstructured Mesh Technologies (Part 1)	Vijay Mahadevan/ANL, Mark Shephard and Cameron Smith/RPI, and Glen Hansen/SNL
4:30	Panel: Challenges in Extreme-Scale Solvers	FASTMath Team
5:30	<i>Dinner Talk: "Perspectives on Teaming from the DOE Labs"</i>	<i>Lori Diachin/LLNL - Invited Speaker</i>
6:30	FASTMath Hands-on Exercises for Algebraic Solvers	Mark Miller/LLNL and the FASTMath Team

9:30 | Wrap-up

<b>Saturday August 9</b>		
7:30 AM	Continental Breakfast	
8:30	Unstructured Mesh Technologies (Part 2)	Vijay Mahadevan/ANL, Mark Shephard and Cameron Smith/RPI, and Glen Hansen/SNL
9:30	Block Structured AMR Libraries and their Interoperability with Other Math Libraries	Mark Adams and Anshu Dubey/LBNL
10:30	Break	
11:00	FASTMath Hands-on Exercises for Meshing and AMR	Mark Miller/LLNL and the FASTMath Team
12:00 PM	Lunch and Hands-on Exercises	
1:00	Wrap-up	
<b>Sunday August 10</b>		
	OFF	
<b>Monday August 11</b>		
7:30 AM	Continental Breakfast	
	<b><i>Toolkits and Frameworks session</i></b>	
8:30	Gaining Insight into Parallel Program Performance Using HPCToolkit	John Mellor-Crummey/Rice University
9:15	Intuitive Performance Engineering at the Exascale with TAU and TAU Commander	John Linford/ParaTools
10:00	Break	
10:30	Tackling Bugs and Performance in Applications at Scale	David Lecomber/Allinea Software Ltd.
11:15	Debugging Scalable MPI, Hybrid and/or Accelerated Applications with TotalView	Chris Gottbrath/Rogue Wave
12:00 PM	Lunch and Hands-on Exercises	
	<b><i>Visualization and Data Analysis session</i></b>	
1:00	Intro to the Session	Mike Papka/ANL
1:05	Visualization Intro	Joe Insley/ANL
2:00	Visualization and Analysis of Massive Data with VisIt	Cyrus Harrison/LLNL
3:00	Break	
3:30	Scientific Visualization with ParaView	Dave DeMarle/Kitware, Inc.
4:30	DIY Parallel Data Analysis	Tom Peterka/ANL
5:00	Visualization in Practice	Joe Insley/ANL
5:30	<i>Dinner Talk: "Massive Parallelism in Economics and Climate Change"</i>	<i>Yongyang Cai/Stanford University - Participant Speaker</i>
6:30	Hands-on Exercises for Tools and Visualization Sessions	Tools and Visualization Lecturers
9:30	Wrap-up	
<b>Tuesday August 12 - Data Intensive Computing and I/O</b>		
7:30 AM	Continental Breakfast	
	<b><i>Data Intensive Computing and I/O session</i></b>	
8:30	Introducing HPC I/O Systems	Rob Ross/ANL
10:00	Break	
10:30	Using the I/O System, and Understanding What Happened	Rob Latham/ANL
12:00 PM	Lunch and Hands-on Exercises	
1:00	Using HDF5	Quincey Koziol/The HDF Group
2:00	MapReduce and Graph Processing (Part 1)	Avery Ching/Facebook
3:00	Break	
3:30	MapReduce and Graph Processing (Part 2)	Avery Ching/Facebook
4:10	Globus Online	Rachana Ananthkrishnan/Computation Institute/University of Chicago
5:30	<i>Dinner Talk: "Title Forthcoming"</i>	<i>Salman Habib/ANL - Invited Speaker</i>
6:30	Hands-on Exercises	
9:30	Wrap-up	

<b>Wednesday August 13 - Community Codes</b>		
7:30 AM	Continental Breakfast	
8:30	Adaptive Linear Solvers and Eigensolvers	Jack Dongarra/University of Tennessee
	<b>Community Codes and Software Engineering session</b>	
9:30	Introduction to the Session	Katherine Riley/ANL
10:30	Break	
11:00	The Impact of Community Codes on Astrophysics	Anshu Dubey/LBNL
12:00 PM	Lunch and Hands-on Exercises	
1:00	Climate and Community Codes	Rob Jacob/ANL
2:00	Community Developed Compiler	Hal Finkel/ANL
3:00	Break	
3:30	Quantum Monte Carlo and Electronic Structure	Anouar Benali/ANL
4:30	Organizing the USQCD Community	Rich Brower/Boston University
5:30	<i>Dinner Talk: "High Performance Computing: Exascale and Beyond"</i>	<i>Marc Snir/ANL - Invited Speaker</i>
6:30	Hands-on Exercises	
9:30	Wrap-up	
<b>Thursday August 14</b>		
7:30 AM	Continental Breakfast	
	<b>Software Carpentry in High-Performance Computing sub-session</b>	
8:30	Software Engineering in Practice in the Scientific Python Community (Part 1)	Aron Ahmadia and Chris Kees/U.S. Army Engineer Research and Development Center
10:00	Break	
10:30	Software Engineering in Practice in the Scientific Python Community (Part 2)	Aron Ahmadia and Chris Kees/U.S. Army Engineer Research and Development Center
12:00 PM	Lunch and Hands-on Exercises	
1:00	Carpentry and Architecture Issues for HPC	Katherine Riley/ANL
2:00	Modern Features of a Production Scientific Code - Uintah	Martin Berzins/University of Utah
3:00	Break	
3:30	Workflows	Mike Wilde/ANL
5:30	<i>Dinner Talk: "Vis Trails - Data Provenance"</i>	<i>David Koop/NYU - Invited Speaker</i>
6:30	Some Near-final Words and Logistics	Paul Messina/ANL
7:30	Hands-on Exercises	
9:30	Wrap-up	
<b>Friday August 15</b>		
7:30 AM	Continental Breakfast	
8:30	EXAM	
10:00	Break	
10:30	Program Reviews and Close-out	
12:00PM	Wrap-up	
	Thank You and Safe Travels	