



Asheville, NC | Exascale and Beyond

## SOS23 AGENDA

### TUESDAY, MARCH 26

6:00 - 8:00 pm	Registration and Welcome Reception - Vanderbilt Terrace
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*Dinner on own*

### WEDNESDAY, MARCH 27 - GRAND BALLROOM C

7:00 - 7:50 am	Breakfast, Grand Ballroom C	
7:50 - 8:00 am	John Turner (ORNL)	Welcome and Overview

#### **Session I: Near Horizon Platforms (through 2021)**

Session Chair: Rob Hoekstra (SNL)

8:00 - 8:20 am	Sudip Dosanjh (LBNL)	Perlmutter: A 2020 Pre-Exascale System Optimized for HPC and Data
8:20 - 8:40 am	Allan Porterfield (Micron)	Memory More than Data
8:40 - 9:00 am	Dan Stanzione (TACC)	Frontera: NSF's Next Generation Leadership System
9:00 - 9:20 am	Nick Dube (HPE)	Vanguard Astra – First Petascale ARM supercomputer
9:20 - 9:40 am	David Womble (ORNL)	The Next Generation Data Analytics Ecosystem
9:40 - 10:00 am	Panel Discussion	

10:00 - 10:30 am	Break
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**Session II: Application Impacts of Mixed and Low Precision Floating-Point**

Session Chair: Jack Dongarra (UTK)

10:30 - 10:50 am	Wayne Joubert (ORNL)	Mixed Precision for Exascale Comparative Genomics
10:50 - 11:10 am	Josh Romero (NVIDIA)	Exascale Deep Learning for Climate Analytics
11:10 - 11:30 am	Matthew Chantry (U. of Oxford)	Mixed-precision for Weather and Climate Predictions
11:30 - 11:50 pm	Jing Zhang (AMD)	Mixed-Precision Training of Deep Neural Networks on AMD Vega GPUs
11:50 - 12:10 pm	Eric Petit (Intel)	Leveraging mixed precision and emerging low precision operators in HPC applications
12:10 - 12:30 pm	Jack Dongarra (U. of Tennessee/ORNL)	Experiments with Mixed Precision Algorithms in Linear Algebra

12:30 pm - 1:30 pm	Lunch
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**Session III: MPI - What is its role going forward?**

Session Chair: Torsten Hoefler (ETHZ)

1:30 - 1:55 pm	Ryan Grant (SNL)	Intelligent NICs and the Future of MPI
1:55 - 2:20 pm	Martin Schulz (TUM)	Adapt or Die: The Challenge for MPI in a Post-Exascale World
2:20 - 2:45 pm	Anthony Skjellum (UTC)	Perspectives on a Quarter-Century of MPI Standardization, Implementation, and Application and Where we go Next
2:45 - 3:10 pm	David Bernholdt (ORNL)	To Exascale and Beyond: Some Strengthes and Weaknesses of MPI
3:10 - 3:30 pm	Panel Discussion	

3:30 pm	Informal Discussions, Side Meetings, and <b>Dinner on your own</b>
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8:30 - 10:30pm	Networking Reception - Mountain View Terrace
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## THURSDAY, MARCH 28 - GRAND BALLROOM C

7:00 - 8:00 am	Breakfast	
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### **Session IV: Data Management (Exascaling and Federation)**

Session Chair: Jay Lofstead (SNL)

8:00 - 8:20 am	Arjun Shankar(ORNL)	Tiering in and Peering out: Approaches to Data-Intensive Science
8:20 - 8:40 am	Phil Carns (ANL)	BYOFS: the opportunities and dangers of specialization in the age of exascale data storage
8:40 - 9:00 am	Dirk Pleiter (Jülich)	Exascaling and Federation: Using Brain Research as Science Driver
9:00 - 9:20 am	Glen Lockwood (NERSC)	Data Management in HPC: A Case Study in the "Worse is Better" Design Philosophy
9:20 - 9:40 am	John Bent (DDN)	Heterogeneity, Schmeterogeneity. Object, Schmobject. Long Live POSIX
9:40 - 10:00 am	Rick Arthur (GE)	Engineering Disruption: Novel Workflows & Draining the Data Swamp

10:00 - 10:30 am	Break	
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### **Session V: Do we really need resilience?**

Session Chair: Kurt Ferreira (SNL)

10:30 - 10:50 am	Christian Engelmann (ORNL)	Resilience by Design (and not as an Afterthought)
10:50 - 11:10 am	Rolf Riesen (Intel)	A Zero Tolerance Policy for Failure Acceptance
11:10 - 11:30 am	Dorian Arnold (Emory)	Big Deal, Little Deal or No Deal? Perspectives on the HPC Resilience Challenge
11:30 - 11:50 pm	Keita Teranishi (SNL)	Programming Model Perspective on Resilience for the next generation computing platforms
11:50 - 12:10 pm	Rich Graham (Mellanox)	The Role of Network Level Fault Tolerance
12:10 - 12:30 pm	Panel Discussion	

### **Lunch on own**

12:30 - 4:15 pm	Informal Discussions and Side Meetings	
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4:15 pm	Shuttle to Dinner - Meet in Grove Park Lobby	
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5:00 - 9:30 pm	Banquet - Sierra Nevada	
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**FRIDAY, MARCH 29 - GRAND BALLROOM C**

7:00 - 8:00 am	Breakfast	
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**Session VI: Cloud Technologies in HPC ecosystem: A necessity or a distraction**

Session Chair: Sadaf Alam (CSCS)

8:00 - 8:20 am	David Y. Hancock (Indiana Univ)	National and Local Impacts of Programmable Cyberinfrastructure using Jetstream
8:20 - 8:40 am	Kevin Kissell (Google)	Cloud Technologies in the HPC Ecosystem: A Necessary Distraction
8:40 - 9:00 am	Bruce D'Amora (IBM)	Cloud Native: Navigating the Traps for High Performance Computing Users
9:00 - 9:20 am	Mark Klein (CSCS)	Composable HPC
9:20 - 9:40 am	Martin Rieger (Penguin)	Security: the Key to Making Cloud Computing Reality in the Federal Space
9:40 - 10:00 am	Panel Discussion	

10:00 - 10:30 am	Break and Group Photo	
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**Session VII: Multi-ExaOp Platforms (beyond 2021)**

Session Chair: Jack Wells (ORNL)

10:30 - 10:50 am	Tom Conte (Ga Tech)	Into The Wild: Integrating non Von Neumann Computing Into HPC
10:50 - 11:10 am	Pat McCormick (LANL)	Yin and Yang: Hardware Heterogeneity & Software Productivity
11:10 - 11:30 am	Steve Scott (Cray)	Beyond Exascale: Playing the CMOS Endgame
11:30 - 11:50 pm	Jean-Marc Denis (European Processor Initiative)	European Processor Initiative
11:50 - 12:10 pm	Beau Paisley (ARM)	Beyond Moore: An Arm vision for Post-Exascale Computing
12:10 - 12:30 pm	Joel Gottlieb (D-Wave)	D-Wave Next Generation Plans and Activities

12:30 - 1:00 pm	Lunch	
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**Session VIII: Crystal Ball and Invitation to SOS24**

Session Chair: John Turner (ORNL)

1:00 - 1:10 pm	Robert Clay (SNL)	
1:10 - 1:20 pm	Sadaf Alam (CSCS)	
1:20 - 1:30 pm	Jeff Nichols (ORNL)	

1:30 - 1:45 pm	Sadaf Alam (CSCS)	Invitation to SOS24
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**Adjourn**