

**Argonne National Laboratory at SC17**  
**Conference Dates: November 12-17, 2017 • Exhibition Dates: November 13-16, 2017**

**SC17 area leads**

- Emerging Technologies – Franck Cappello (chair)
- Panels – Lois Curfman McInnes (vice chair)
- Awards – Paul Hovland (vice chair)

**Technical papers committee**

- Applications track – Anshu Dubey (chair), Stefan Wild, Hal Finkel
- Cloud computing track – Kate Keahey (chair)
- Data analytics, visualization and storage track – Tom Peterka
- State of the Practice track – Daniel Katz (chair, MCS faculty guest)
- Programming systems track – Pavan Balaji

**Full Schedule**

**Pre-Conference**

**Saturday, November 11**

**Tutorial:**

In Situ Software Defined Visualization Hands-On Lab: Using OSPRay API with Data-Distributed Applications  
*TIME: 10:15AM – 11:45AM • LOCATION: Intel HPC Developer Conference; Sheraton Denver Downtown (Colorado Room)*  
PRESENTERS: Will Usher, Jefferson Amstutz, **Silvio Rizzi**, Jim Jeffers

**Technical Lectures:**

Benefits of Intel Memory Drive Technology for Scientific Applications  
*TIME: 3:15PM– 3:45PM • LOCATION: Intel HPC Developer Conference; Sheraton Denver Downtown (Silver Room)*  
PRESENTER: Vladimir Mironov, **Yuri Alexeev**, Andrey Kudryavtsev, Igor Chernykh

Interactive In Situ Visualization of LAMMPS simulations with OSPRay  
*TIME: 3:45PM– 4:15PM • LOCATION: Intel HPC Developer Conference; Sheraton Denver Downtown (Tower Court A)*  
PRESENTERS: **Silvio Rizzi**, Will Usher, and **Joseph A. Insley**

**Poster:**

MPI/OpenMP Parallelization of the Hartree-Fock Method for the Intel Xeon Phi Processor  
*TIME: 5:30PM– 7:30PM • LOCATION: Intel HPC Developer Conference; Sheraton Denver Downtown (South Convention Lobby)*  
PRESENTER: Vladimir Mironov, **Yuri Alexeev**

**Sunday, November 12**

**Workshop Papers:**

*Paper:* Scalable In Situ Analysis of Molecular Dynamics Simulations  
*Workshop:* In Situ Infrastructures for Enabling Extreme-Scale Analysis and Visualization (ISAV 2017)  
*TIME: 10:30AM –10:55AM • LOCATION: 605*  
AUTHORS: **Preeti Malakar, Christopher Knight, Todd Munson, Venkatram Vishwanath, and Michael E. Papka**

*Paper:* In Situ Workflows at Exascale: System Software to the Rescue  
*Workshop:* In Situ Infrastructures for Enabling Extreme-Scale Analysis and Visualization (ISAV 2017)  
*TIME: 1:55PM –2:20PM • LOCATION: 605*  
AUTHORS: **Matthieu Dreher, Swann Perarnau, Tom Peterka, Kamil Iskra, and Pete Beckman**

*Paper:* Position paper - Proposal for a Scientific Software Lifecycle Model

*Workshop:* The 2017 International Workshop on Software Engineering for High Performance Computing in Computational and Data-Enabled Science and Engineering (SE-CoDeSE 2017)

*TIME:* 4:15PM –4:30PM • *LOCATION:* 501

*AUTHORS:* **Anshu Dubey** and **Lois Curfman McInnes**

*Paper:* Towards Self-Verification in Finite Difference Code Generation

*Workshop:* First International Workshop on Software Correctness for HPC Applications (Correctness 2017)

*TIME:* 12:12PM –12:29PM • *LOCATION:* 702

*AUTHORS:* Jan Hueckelheim, Ziqing Luo, Fabio Luporini, Navjot Kukreja, Michael Lange, Gerard Gorman, Stephen Siegel, Matthew Dwyer, **Paul Hovland**

## Workshop Lightning Talks:

*Topic:* Flexible In Situ Visualization of LAMMPS Simulations

*Workshop:* In Situ Infrastructures for Enabling Extreme-Scale Analysis and Visualization (ISAV 2017)

*TIME:* 11:45AM –11:50AM • *LOCATION:* 605

*AUTHORS:* Will Usher, Jefferson Amstutz, **Joseph Insley**, Aaron Knoll, **Michael Papka**, Valerio Pascucci, **Silvio Rizzi** and **Venkatram Vishwanath**

*Topic:* Parallel Streaming for In Transit Analysis with Heterogeneous Data Layout

*Workshop:* In Situ Infrastructures for Enabling Extreme-Scale Analysis and Visualization (ISAV 2017)

*TIME:* 2:50PM –2:55PM • *LOCATION:* 605

*AUTHORS:* **Thomas Marrinan**, Greg Eisenhauer, Matthew Wolf, **Joseph Insley**, **Silvio Rizzi** and **Michael Papka**

## Workshops:

[Eighth Annual Workshop for the Energy Efficient HPC Working Group \(EE HPC WG\)](#)

*TIME:* 9:00AM –5:30PM • *LOCATION:* 704-706

*ORGANIZERS:* Michael Patterson, Torsten Wilde, Natalie Bates, Anna Maria Bailey, David Martinez, David Grant, James H. Laros, James Rogers, Ramkumar Nagappan, Michael J. Ellsworth, Steven Martin, Dale Sartor, Bilel Hadri, Andres Marquez, Nicolas Dubé, Josip Loncaric, **Susan Coghlan**, Greg Koenig, Ladina Gilly, Daniel Hackenberg, Fumiyoshi Shoji, Thomas Durbin, and Wu Feng

[Seventh Workshop on Python for High-Performance and Scientific Computing \(PyHPC 2017\)](#)

*TIME:* 9:00AM –5:30PM • *LOCATION:* 710-712

*ORGANIZERS:* Andreas Schreiber, **William Scullin**, Bill Spotz, and Rollin Thomas

[In Situ Infrastructures for Enabling Extreme-Scale Analysis and Visualization \(ISAV 2017\)](#)

*TIME:* 9:00AM –5:30PM • *LOCATION:* 605

*ORGANIZERS:* Wes Bethel, Patrick O'Leary, Gunther Weber, **Nicola Ferrier**, Matthew Wolf, Earl Duque

[Women in HPC: Diversifying the HPC Community](#)

*TIME:* 9:00AM –5:30PM • *LOCATION:* 503-504

*ORGANIZERS:* Toni Collis, Alison Kennedy, Sunita Chandrasekaran, Patricia Damkroger, Kelly Gaither, Rebecca Hartman-Baker, Daniel Holmes, Adrian Jackson, Kim McMahon, **Misbah Mubarak**, and Lorna Rivera

[Workshop on Exascale MPI \(ExaMPI\)](#)

*TIME:* 9:00AM –5:30PM • *LOCATION:* 603

*ORGANIZERS:* Ryan Gran, Patrick Bridges, Anthony Skjellum, Purushotham Bangalorre, Ron Brightwell, **Pavan Balaji**, Masamichi Takagi, and Geoffroy Vallee

[Fourth SC Workshop on Best Practices for HPC Training](#)

*TIME:* 2:00PM –5:30PM • *LOCATION:* 601

*ORGANIZERS:* Scott Lathrop, Jay Alameda, Carl Albing, Nia Alexandrov, Maxim Belkin, Dana Brunson, **Richard Coffey**, Fernanda Foertter, Richard Gerber, Bilel Hadri, Rebecca Hartman-Baker, Susan Mehringer, Julia Mullen, Henry Neeman, Maria-Ribera Sancho, Gowtham Shankara, Nitin Sukhija, Robert Whitten, and Vassil Alexandrov

[The 2017 International Workshop on Software Engineering for High Performance Computing in Computational and Data-Enabled Science and Engineering \(SE-CoDeSE 2017\)](#)

*TIME:* 2:00PM –5:30PM • *LOCATION:* 501

*ORGANIZERS:* Jeffrey C. Carver, Neil Chue Hong, Selim Ciraci, and **Daniel S. Katz** (MCS faculty guest)

## Network Research Exhibition:

*Topic:* Orchestrating Intercontinental Advance Reservations with Software-Defined Exchanges

*Workshop:* The 4<sup>th</sup> International Workshop on Innovating the Network for Data Intensive Science (INDIS)

*TIME:* 2:30PM – 2:50PM • *LOCATION:* 607

*SPEAKERS:* Joaquin Chung, **Rajkumar Kettimuthu**, Nam Pho, Russ Clark and Henry Owen

*Topic:* Calibers: A Bandwidth Calendaring Paradigm for Science Workflows

*Workshop:* The 4<sup>th</sup> International Workshop on Innovating the Network for Data Intensive Science (INDIS)

*TIME:* 2:50PM – 3:10PM • *LOCATION:* 607

*SPEAKERS:* Eric Pouyoul, Mariam Kiran, Nathan Hanford, Dipak Ghosal, Fatemah Alali, **Raj Kettimuthu**, and Ben Mackcrane

*Topic:* Towards a Smart Data Transfer Node

*Workshop:* The 4<sup>th</sup> International Workshop on Innovating the Network for Data Intensive Science (INDIS)

*TIME:* 4:40PM – 5:00PM • *LOCATION:* 607

*SPEAKERS:* **Zhengchun Liu**, **Rajkumar Kettimuthu**, **Ian Foster**, and **Peter Beckman**

*Topic:* Transferring a Petabyte in a Day

*Workshop:* The 4<sup>th</sup> International Workshop on Innovating the Network for Data Intensive Science (INDIS)

*TIME:* 5:00PM – 5:20PM • *LOCATION:* 607

*SPEAKERS:* **Rajkumar Kettimuthu**, **Zhengchun Liu**, **Ian Foster**, **Katrin Heitmann**, and **Franck Cappello**

## Tutorials:

[Compression of Scientific Data](#)

*TIME:* 8:30AM – 12:00PM • *LOCATION:* 401

*PRESENTERS:* **Franck Cappello** and Peter Lindstrom

[Large Scale Visualization with ParaView](#)

*TIME:* 8:30AM – 5:00PM • *LOCATION:* 403

*PRESENTERS:* Kenneth Moreland, W. Alan Scott, David E. DeMarle, **Joseph A. Insley**, John Patchett, and Jon Woodring

[Cloud Computing for Science and Engineering](#)

*TIME:* 8:30AM – 5:00PM • *LOCATION:* 203

*PRESENTERS:* **Ian Foster**, Dennis Gannon, and Vani Mandava

## Monday, November 13

### Invited Talk:

[The U.S. D.O.E. Exascale Computing Project – Goals and Challenges](#)

*TIME:* 10:30AM – 11:15PM • *LOCATION:* Mile High Ballroom

*SPEAKER:* **Paul Messina**

### Plenary Panel:

[HPC Connects Plenary: The Century of the City](#)

*TIME:* 5:30PM – 6:30PM • *LOCATION:* Mile High Ballroom

*PARTICIPANTS:* **Pete Beckman**, **Charlie Catlett**, more

### Workshop Papers:

*Paper:* PoLiMEr: An Energy Monitoring and Power Limiting Interface for HPC Applications

*Workshop:* Fifth International Workshop on Energy Efficient Supercomputing (E2SC)

*TIME:* 0:00AM – 0:00PM • *LOCATION:* 506 – check <http://hpc.pnl.gov/conf/e2sc/2017/program.html>

*AUTHORS:* **Ivana Marincic**, **Venkatram Vishwanath**, and Henry Hoffmann

*Paper:* Performance and Power Characteristics and Optimizations of Hybrid MPI/OpenMP LULESH Miniapps under Various Workloads

*Workshop:* Fifth International Workshop on Energy Efficient Supercomputing (E2SC)

*TIME:* 0:00AM – 0:00PM • *LOCATION:* 506 – check <http://hpc.pnl.gov/conf/e2sc/2017/program.html>

*AUTHORS:* **Xingfu Wu**, **Valerie Taylor**, Jeanine Cook, and Tanner Juedeman

*Paper:* Launching MPI Applications inside MPI Applications  
*Workshop:* 12<sup>th</sup> Workshop on Workflows in Support of Large-Scale Science (WORKS 2017)  
*TIME:* 0:00AM – 0:00PM • *LOCATION:* 501 – check <http://works.cs.cardiff.ac.uk/>  
*AUTHORS:* **Matthieu Dorier, Justin M. Wozniak, and Robert Ross**

*Paper:* UMAMI: A Recipe for Generating Meaningful Metrics through Holistic I/O Performance Analysis  
*Workshop:* 2<sup>nd</sup> Joint International Workshop on Parallel Data Storage and Data Intensive Scalable Computing Systems (PDSW-DISCS)  
*TIME:* 0:00AM – 0:00PM • *LOCATION:* 601 – check [www.pdsw.org](http://www.pdsw.org)  
*AUTHORS:* Glenn K. Lockwood, **Shane Snyder**, Wucherl Yoo, Kevin Harms, Zachary Nault, Suren Byna, **Philip Carns**, and Nicholas J. Wright

*Paper:* CoSS: Proposing a Contract-Based Storage System for HPC  
*Workshop:* 2<sup>nd</sup> Joint International Workshop on Parallel Data Storage and Data Intensive Scalable Computing Systems (PDSW-DISCS)  
*TIME:* 0:00AM – 0:00PM • *LOCATION:* 601 – check [www.pdsw.org](http://www.pdsw.org)  
*AUTHORS:* **Matthieu Dorier**, Matthieu Dreher, **Tom Peterka**, and **Robert Ross**

*Paper:* Toward Scalable Monitoring on Large-Scale Storage for Software Defined Cyberinfrastructure  
*Workshop:* 2<sup>nd</sup> Joint International Workshop on Parallel Data Storage and Data Intensive Scalable Computing Systems (PDSW-DISCS)  
*TIME:* 0:00AM – 0:00PM • *LOCATION:* 601 – check [www.pdsw.org](http://www.pdsw.org)  
*AUTHORS:* Arnab K. Paul, **Ryan Chard**, Kyle Chard, Steven Tuecke, Ali R. Butt, **Ian Foster**

## Workshops:

[LLVM-HPC2017: Fourth Workshop on the LLVM Compiler Infrastructure in HPC](#)

*TIME:* 9:00AM – 5:30PM • *LOCATION:* 502

*ORGANIZER:* **Hal Finkel**

[HPC Systems Professional Workshop](#)

*TIME:* 9:00AM – 5:30PM • *LOCATION:* 603

*ORGANIZERS:* Randy Herban, Isaax Traxler, Jenett Tillotson, **William Scullin**, Paul Peltz, David Clifton, and Alex Younts

## Tutorials:

[In Situ Analysis and Visualization with SENSEI](#)

*TIME:* 8:30AM – 12:00PM • *LOCATION:* 406

*PRESENTERS:* E. Wes Bethel, Andrew C. Bauer, Brad Whitlock, Matthew Wolf, Burlen Loring, and **Silvio Rizzi**

[Better Scientific Software](#)

*TIME:* 8:30AM – 12:00PM • *LOCATION:* 303

*PRESENTERS:* David E. Bernholldt, **Anshu Dubey**, Michael A. Heroux, and Alicia Klinvex

[Advanced MPI Programming](#)

*TIME:* 8:30AM – 5:00PM • *LOCATION:* 404

*PRESENTERS:* **Pavan Balaji**, William Gropp, Torsten Hoefler, and **Rajeev Thakur**

[Parallel I/O in Practice](#)

*TIME:* 8:30AM – 5:00PM • *LOCATION:* 403

*PRESENTERS:* **Rob Latham**, **Rob Ross**, Brent Welch, and Katie Antypas

## Exhibition Hall

### Technical Talks:

Data-Driven Scientific Discoveries on the ALCF Theta Supercomputing System

*TIME:* 7:15PM – 8:00PM • *LOCATION:* Intel Booth

*SPEAKER:* **Venkat Vishwanath**

Early Results on the Argonne Xeon Phi Cray XC-40 System Theta

*TIME:* 8:00PM – 9:00PM • *LOCATION:* Intel Booth

*SPEAKER:* **Scott Parker**

TRIP: An Ultra-Low Latency, TeraOps/s Reconfigurable Inference Processor for Real-Time Multi-Layer Perceptrons  
TIME: 8:00PM – 9:00PM (includes table discussion) • LOCATION: Intel Booth  
SPEAKERS: Ahmed Sanaullah, Chen Yang, **Yuri Alexeev**, Kazutomo Yoshii, Martin Herborcht

#### Student Cluster Competition:

TIME: 9:30AM – 5:30PM (Highest Linpack runs); competition ends Wednesday at 5:30PM • LOCATION: Exhibition Hall  
TEAM: Illinois Institute of Technology/Maine South High School/Adlai E. Stevenson High School team  
TEAM ADVISORS: **Ben Allen, Ioan Raicu, and William Scullin**

## Tuesday, November 14

#### Papers:

[Probabilistic Guarantees of Execution Duration for Amazon Spot Instances](#)

TIME: 4:30PM – 5:00PM • LOCATION: 405-406-407

AUTHORS: Rich Wolski, John Brevik, **Ryan Chard**, Kyle Chard

#### HPC Impact Showcase:

[Impact of the DOE and NCI Partnership on Precision Oncology](#)

TIME: 10:30AM – 11:00AM • LOCATION: 501-502

SPEAKER: **Rick Stevens**

#### Birds of a Feather:

[LLVM in HPC: Uses and Desires](#)

TIME: 12:15PM – 1:15PM • LOCATION: 601

SESSION LEADERS: Jim Cownie and **Hal Finkel**

[Software Engineers: Careers in Research](#)

TIME: 12:15PM – 1:15PM • LOCATION: 603

SESSION LEADERS: Neil Chue Hong, **Daniel Katz** (MCS faculty guest), Jay Jay Billings, Alys Brett, Jeffrey Carver, Catherine Jones, Lauren Michael, David Perez-Suarez, and Andrew Turner

[PowerAPI, GEOPM and Redfish: Open Interfaces for Power/Energy Measurement and Control](#)

TIME: 5:15PM – 7:00PM • LOCATION: 710-712

SESSION LEADERS: Ryan Grant, Jonathan Eastep, Jeff Autor, Nicolas Dube, **Vitali Morozov**, Todd Rosedahl, Steve Martin, James Laros, III, Stephen Oliver, Ramkumar Nagappan, and Vinanti Phadke

[Software Engineering and Reuse in Computational Science and Engineering](#)

TIME: 5:15PM – 7:00PM • LOCATION: 601

SESSION LEADERS: David Bernholdt (lead), Maxim Belkin, Alys Brett, Jeffrey Carver, Neil Chue Hong, Mike Folk, Gerard Gorman, William Gropp, Michael Heroux, **Daniel Katz** (MCS faculty guest), David Keyes, Scott Lathrop, Randall LeVeque, James Lin, **Lois Curfman McInnes**, and Kengo Nakajima

[Reconfigurable Computing in Exascale](#)

TIME: 5:15PM – 7:00PM • LOCATION: 405-406-407

SESSION LEADERS: Sven Karlsson, David Donofrio, John Leidel, Hans-Christian Hoppe, Marie-Christine Sawley, **Kazutomo Yoshii**, Kentaro Sano, and **Franck Cappello**

[Cross-Layer Allocation and Management of Hardware Resources in Shared Memory Nodes](#)

TIME: 5:15PM – 7:00PM • LOCATION: 607

SESSION LEADERS: Emmanuel Jeannot, **Pete Beckman**, and Brice Goglin

#### Scientific Visualization & Data Analytics Showcase:

[Visualizing Silicene Growth Through Island Migration and Coalescence](#)

TIME: 8:30AM – 5:00PM • LOCATION: Mile High Prefunction

AUTHORS: **Joseph A. Insley, Mathew J. Cherukara, Badri Narayanan, Henry Chan, and Subramanian Sankaranarayanan**

#### Posters:

MPI/OpenMP Parallelization of the Hartree-Fock Method for the Second Generation Intel Xeon Phi

TIME: 8:30AM – 5:00PM • LOCATION: Four Seasons Ballroom

AUTHORS: Vladimir Mironov, Alexander Moskovsky, Kristopher Keipert, Michael D’Mello, Mark Gordon, and **Yuri Alexeev**

[NOTE: SC17 Best Poster Nominee]

PaSTRI: A Novel Data Compression Algorithm for Two-Electron Integrals in Quantum Chemistry

TIME: 8:30AM – 5:00PM • LOCATION: Four Seasons Ballroom

AUTHORS: Ali Murat Gok, Dingwen Tao, Sheng Di, Vladimir Mironov, **Yuri Alexeev**, and **Franck Cappello**

TRIP: An Ultra-Low Latency, TeraOps/s Reconfigurable Inference Processor for Multi-Layer Perceptrons

TIME: 8:30AM – 5:00PM • LOCATION: Four Seasons Ballroom

AUTHORS: Ahmed Sanoullah, Chen Yang, **Yuri Alexeev**, **Kazutomo Yoshii**, and Martin C. Herbordt

Understanding How OpenCL Parameters Impact on Off-Chip Memory Performance of FPGA Platforms

TIME: 8:30AM – 5:00PM • LOCATION: Four Seasons Ballroom

AUTHORS: Yingyi Luo, **Zheming Jin**, **Kazutomo Yoshii**, and Seda Ogren-ci-Memik

Exploring the Performance of Electron Correlation Method Implementations on Kove XPDs

TIME: 8:30AM – 5:00PM • LOCATION: Four Seasons Ballroom

AUTHORS: **Colleen Bertoni**, **Brian Toonen**, **William Allcock**, Spencer Pruitt, and Mark Gordon

### ACM Student Research Competition:

Applying Image Feature Extraction to Cluttered Scientific Repositories

TIME: 8:30AM – 5:00PM • LOCATION: Four Seasons Ballroom

AUTHORS: Emily Herron, Tyler Skluzacek, **Ian Foster**, Kyle Chard

Finding a Needle in a Field of Haystacks: Metadata Search for Distributed Research Repositories

TIME: 8:30AM – 5:00PM • LOCATION: Four Seasons Ballroom

AUTHORS: Anna Blue Keleher, Kyle Chard, **Ian Foster**, Ioan Raicu, Alex Orhean

### Exhibition Hall

#### Talks:

Interactive In Situ Visualization of LAMMPS simulations with OSPRay

TIME: 2:00PM – 2:15PM; Table Topic 2:15 – 4:00PM • LOCATION: Intel Booth Nerve Center

SPEAKER: **Silvio Rizzi**

Where Optane Fits in HPC

TIME: 12:00PM – 1:00PM (includes table discussion) • LOCATION: Intel Booth

SPEAKERS: Vladimir Mironov, **Yuri Alexeev**, Andrey Kudryavtsev

### Wednesday, November 15

#### Papers:

[Embracing a New Era of Highly Efficient and Productive Quantum Monte Carlo Simulations](#)

TIME: 3:30PM – 4:00PM • LOCATION: 402-403-404

AUTHORS: Amrita Mathuriya, **Ye Luo**, Raymond C. Clay III, **Anouar Benali**, Luke Shulenburger, and Jeongnim Kim

[An Efficient MPI/OpenMP Parallelization of the Hartree-Fock Method for the Second Generation of Intel Xeon Phi](#)

TIME: 4:00PM – 4:30PM • LOCATION: 402-403-404

AUTHORS: Vladimir Mironov, Alexander Moskovsky, Kristopher Keipert, Michael D’Mello, Mark Gordon, and **Yuri Alexeev**

#### Birds of a Feather:

[The Internet of Things and HPC: Are They Teaming Up to Work Together?](#)

TIME: 12:15PM – 1:15PM • LOCATION: 701

SESSION LEADERS: **Pete Beckman** and Nicolás Erdödy

[Contemporary Design of Supercomputer Experiments](#)

TIME: 12:15PM – 1:15PM • LOCATION: 710-712

SESSION LEADERS: Dmitry Duplyakin, **Jed Brown**, **Stefan Wild**, **Prasanna Balaprakash**, Paul Constantine, Jeffrey Hokanson, and Felix Wolf

[Distributed and Heterogeneous Programming in C++ for HPC](#)

*TIME: 12:15PM – 1:15PM • LOCATION: 405-406-407*

SESSION LEADERS: **Hal Finkel** and Michael Wong

[Practical Reproducibility by Managing Experiments Like Software](#)

*TIME: 12:15PM – 1:15PM • LOCATION: 601*

SESSION LEADERS: Ivo Jimenez, Carlos Maltzahn, Jay Lofstead, Michael Heroux, and **Kate Keahey**

[Modeling and Simulation of Communication in HPC Systems](#)

*TIME: 12:15PM – 1:15PM • LOCATION: 402-403-404*

SESSION LEADERS: **Misbah Mubarak**, Nikhil Jain, and Jeremiah Wilke

[High Performance Computing Education in US Data Science](#)

*TIME: 5:15PM – 7:00PM • LOCATION: 703*

SESSION LEADERS: Weijia Zu, Kelly Gaither, **Daniel Katz** (MCS faculty guest), Ann Stapleton, Gopalan Oppiliappan, Mark Speck, Hui Zhang, and Rosalia Gomez

[Big Data and Exascale Computing \(BDEC\) Community Report](#)

*TIME: 5:15PM – 7:00PM • LOCATION: 710-712*

SESSION LEADERS: Jack Dongarra, Mark Asch, and **Pete Beckman**

Scientific Visualization & Data Analytics Showcase:

[Visualizing Silicene Growth Through Island Migration and Coalescence](#)

*TIME: 8:30AM – 5:00PM • LOCATION: Mile High Prefunction*

AUTHORS: **Joseph A. Insley**, **Mathew J. Cherukara**, **Badri Narayanan**, **Henry Chan**, and **Subramanian Sankaranarayanan**

Posters:

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AUTHORS: Anna Blue Keleher, Kyle Chard, **Ian Foster**, Ioan Raicu, Alex Orhean

## Exhibition Hall

Going Smart and Deep on Materials at ALCF

*TIME: 1:45PM – 2:30PM • LOCATION: Department of Energy Booth (#613)*

SPEAKERS: **Ian Foster**

An Efficient MPI/OpenMP Parallelization of the Hartree-Fock Method for the Second Generation of KNL

*TIME: 3:00PM – 4:00PM (includes table discussion) • LOCATION: Intel Booth*

SPEAKERS: Vladimir Mironov, Alexander Moskovsky, Kristopher Keipert, Michael D’Mello, Mark Gordon, and **Yuri Alexeev**

## **Thursday, November 16**

Papers:

[Predicting the Performance Impact of Different Fat-Tree Configurations](#)

*TIME: 10:30AM – 11:00AM • LOCATION: 402-403-404*

AUTHORS: Nikhil Jain, Abhinav Bhatele, Louis Howell, David Boehme, Ian Karlin, Edgar A. Leon, **Misbah Mubarak**, Noah Wolfe, Todd Gamblin, and Matthew Leininger

[Run-to-Run Variability on Xeon Phi Based Cray XC Systems](#)

*TIME: 11:30AM – 12:00PM • LOCATION: 402-403-404*

AUTHORS: **Sudheer Chunduri**, Kevin Harms, **Scott Parker**, **Vitali Morozov**, Samuel Oshin, Naveen Cherukuri, and **Kalyan Kumaran**

[Why is MPI So Slow? Analyzing the Fundamental Limits in Implementing MPI-3.1](#)

*TIME: 3:30PM – 4:00PM • LOCATION: 405-406-407*

AUTHORS: **Ken Raffanetti**, **Abdelhalim Amer**, **Lena Oden**, Charles Archer, Wesley Bland, Hajime Fujita, **Yanfei Guo**, Tomislav Janjusic, Dmitry Durnov, Michael Blocksome, **Min Si**, **Sangmin Seo**, Akhil Langer, Gengbin Zheng, Masamichi Takagi, **Paul Coffman**, Jithin Jose, Sayantan Sur, Alexander Sannikov, Sergey Oblomov, Michael Chuvelev, Masayuki Hatanaka, Xin Zhao, Paul Fischer, Thilina Rathnayake, Matt Otten, **Misun Min**, and **Pavan Balaji**

Panel:

[Common Big Data Challenges in Bio, Geo, Climate, and Social Sciences](#)

*TIME: 10:30AM – 12:00PM • LOCATION: 201-203*

PANELISTS: Sushil Prasad, Joel Saltz, Vipin Kumar, Chaitanya Baru, E. Lynn Usery, Daniel Reed, **Pete Beckman**, and Sangram Ganguly

Birds of a Feather:

[Analyzing Parallel I/O](#)

*TIME: 12:15PM – 1:15PM • LOCATION: 402-403-404*

SESSION LEADERS: **Philip Carns** and Julian Kunke

[HPC Education: Meeting of the SIGHPC Education Chapter](#)

*TIME: 12:15PM – 1:15PM • LOCATION: 205-207*

SESSION LEADERS: **Richard Coffey**, Fernanda Foertter, and Steve Gordon

[MPICH: A High-Performance Open-Source MPI Implementation](#)

*TIME: 12:15PM – 1:15PM • LOCATION: 701*

SESSION LEADERS: **Ken Raffanetti**, **Pavan Balaji**, **Abdelhalim Amer**, **Yanfei Guo**, **Neelima Bayyapu**, and **Kavitha Madhu**

Scientific Visualization & Data Analytics Showcase:

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PaSTRI: A Novel Data Compression Algorithm for Two-Electron Integrals in Quantum Chemistry  
*TIME: 8:30AM – 5:00PM • LOCATION: Four Seasons Ballroom*  
AUTHORS: Ali Murat Gok, Dingwen Tao, Sheng Di, Vladimir Mironov, **Yuri Alexeev**, and **Franck Cappello**

TRIP: An Ultra-Low Latency, TeraOps/s Reconfigurable Inference Processor for Multi-Layer Perceptrons  
*TIME: 8:30AM – 5:00PM • LOCATION: Four Seasons Ballroom*  
AUTHORS: Ahmed Sanallah, Chen Yang, **Yuri Alexeev**, **Kazutomo Yoshii**, and Martin C. Herbordt

Understanding How OpenCL Parameters Impact on Off-Chip Memory Performance of FPGA Platforms  
*TIME: 8:30AM – 5:00PM • LOCATION: Four Seasons Ballroom*  
AUTHORS: Yingyi Luo, **Zheming Jin**, **Kazutomo Yoshii**, and Seda Ogrenci-Memik

Exploring the Performance of Electron Correlation Method Implementations on Kove XPDs  
*TIME: 8:30AM – 5:00PM • LOCATION: Four Seasons Ballroom*  
AUTHORS: **Colleen Bertoni**, **Brian Toonen**, **William Allcock**, Spencer Pruitt, and Mark Gordon

#### ACM Student Research Competition:

Applying Image Feature Extraction to Cluttered Scientific Repositories  
*TIME: 8:30AM – 5:00PM • LOCATION: Four Seasons Ballroom*  
AUTHORS: Emily Herron, Tyler Skluzacek, **Ian Foster**, Kyle Chard

Finding a Needle in a Field of Haystacks: Metadata Search for Distributed Research Repositories  
*TIME: 8:30AM – 5:00PM • LOCATION: Four Seasons Ballroom*  
AUTHORS: Anna Blue Keleher, Kyle Chard, **Ian Foster**, Ioan Raicu, Alex Orhean

## Friday, November 17

#### Workshop Papers:

*Paper:* High-Throughput Cancer Hypothesis Testing with an Integrated PhysiCell-EMEWs Workflow

*Workshop:* Computational Approaches for Cancer

*TIME: 9:15AM – 9:35AM • LOCATION: 406-407*

AUTHORS: Jonathan Ozik, Nicholas Collier, **Justin M. Wozniak**, Charles Macal, Chase Cockrell, Samuel H. Friedman, Ahmadreza Ghaffarizadeh, Randy Heiland, Gary An, and Paul Macklin

*Paper:* A Workflow Framework for Machine Learning Applied to Cancer Research

*Workshop:* Computational Approaches for Cancer

*TIME: 9:55AM – 10:15AM • LOCATION: 406-407*

AUTHORS: **Justin M. Wozniak**, **Rajeev Jain**, **Prasanna Balaprakash**, Jonathan Ozik, Nicholson Collier, John Bauer, Fangfang Xia, Thomas Brettin, Rick Stevens, Jamaludin Mohd-Yusof, Cristina, Garcia Cardona, Brian Van Essen, and Matthew Baughman

*Paper:* Boosting Curative Surgery Success Rates using FPGAs

*Workshop:* Computational Approaches for Cancer

*TIME: 10:45AM – 11:05AM • LOCATION: 406-407*

AUTHORS: Ahmed Sanallah, Martin Herbordt, Chen Yang, **Yuri Alexeev**, and **Kazutomo Yoshii**

#### Workshops:

[H2RC: Third International Workshop on Heterogeneous Computing with Reconfigurable Logic](#)

*TIME: 8:30AM – 12:00PM • LOCATION: 402-403*

ORGANIZERS: Michaela Blott, Jason Bakos, Torsten Hoefler, Michael Lysaght, and **Franck Cappello**

[The 2<sup>nd</sup> International Workshop on Data Reduction for Big Scientific Data \(DRBSD-2\)](#)

*TIME: 8:30AM – 12:00PM • LOCATION: 302-303*

ORGANIZERS: Scott Klasky, Qing Gary Liu, Mark Ainsworth, and **Ian Foster**