



# Parallel Applications Workshop, Alternatives to MPI+X

Monday, November 14<sup>th</sup>, 2022  
Hybrid Event

Held in conjunction with SC22:  
The International Conference for High Performance Computing, Networking, Storage, and Analysis



# Organization

- Workshop Chair
  - Karla Morris
    - Sandia National Laboratories
- Organizing Committee
  - Michael Ferguson
    - Hewlett Packard Enterprise
  - Elliott Slaughter
    - SLAC National Accelerator Laboratory
  - Irene Moulitsas
    - Cranfield University
- Program Committee Chairs
  - Bill Long
    - Hewlett Packard Enterprise
  - Daniele Lezzi
    - Barcelona Supercomputing Center
- Advisory Committee
  - Bradford L. Chamberlain
    - Hewlett Packard Enterprise
  - Damian W. I. Rouson
    - Sourcery Institute
  - Katherine A. Yelick
    - Lawrence Berkeley National Laboratory



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# Program Committee

- David Bunde
- Barbara Chapman
- Lúcia María de Assumpcao Drummond
- Sally Ellingson
- Michael Ferguson
- Salvatore Filippone
- Dounia Khaldi
- Eric Laurendeau
- Daniele Lezzi
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- Universidade Federal Fluminense
- University of Kentucky
- Hewlett Packard Enterprise
- Università di Roma Tor Vergata
- Intel
- Polytechnique Montreal
- Barcelona Supercomputing Center
- CNRS and University of Bordeaux
- Hewlett Packard Enterprise
- Barcelona Supercomputing Center
- National High Technology Center
- Sandia National Laboratories
- Cranfield University
- Oak Ridge National Laboratory
- RIKEN Center for Computational Science
- Los Alamos National Laboratory
- SLAC National Accelerator Laboratory
- University of Tokyo
- NVIDIA
- Georgia Institute of Technology

# Pictures and Videos

- Pictures and Video Committee Chair
  - Irene Moulitsas - Cranfield University
- Pictures and Video Review Committee
  - Dan Bonachea - Lawrence Berkeley National Laboratory
  - Valentin Churavy - Massachusetts Institute of Technology
  - Karl Jenkins - Cranfield University
  - Stavros Kassinos - University of Cyprus
  - Lee Margetts - Manchester University
  - Hari Radhakrishnan - NIPD Genetics
  - Soren Rasmussen - UCAR



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# Program

8:30 - Welcome and Introduction

8:32 - **Survey of Technologies for Developers of Parallel Applications**

10:00 - Break (30 minutes)

10:30 - **Session 1**

12:00 - Lunch (90 minutes)

1:30 - **Distinguished Speaker:**

Jaqueline Chen - Sandia National Laboratories

*“The Convergence of Exascale Computing, Data Science and Visualization  
Towards Zero-Carbon Fuels for Power and Transportation”*

2:18 - **Session 2**

3:00 - Break (30 minutes)

3:30 - **Panel Discussion**



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# Survey of Technologies for Developers of Parallel Applications -- 8:32 – 10:00

- Please take a moment to give us feedback!

- LINK .....  
(goes to official SC22 Site)

- Coming Up

8:32 - Rosa Badia  
Barcelona Supercomputing Center

8:52 - Olivier Aumage  
French Institute for Research in Computer Science and Automation

9:18 - William Long  
Hewlett Packard Enterprise

9:38 - *Michelle Strout*  
Hewlett Packard Enterprise

9:52 - Q&A



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# Session #1 -- 10:30 – 12:00

- Please take a moment to give us feedback!

- LINK [.....](#)  
(goes to official SC22 Site)

- Coming Up

10:30 - *Extending OpenMP and OpenSHMEM for Efficient Heterogeneous Computing*

**Wenbin Lu**, Shilei Tian, Tony Curtis, and Barbara Chapman

10:52 - *Task Fusion in Distributed Runtimes*

Shiv Sundram, Wonchan Lee, and Alex Aiken

11:14 - *Composition of Algorithmic Building Blocks in Template Task Graphs*  
Thomas Herault, **Joseph Schuchart**, Edward F. Valeev, and George Bosilca

11:37 - *Asynchronous Workload Balancing through Persistent Work-Stealing and Offloading for a Distributed Actor Model Library*

Yakup Budanaz, **Mario Wille**, and Michael Bader



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# Session #2 -- 1:30 – 3:00

- Please take a moment to give us feedback!
  - LINK .....  
(goes to official SC22 Site)
- Coming Up
  - 1:30 - **Distinguished Speaker:**  
**Jaqueline Chen** - Sandia National Laboratories  
*The Convergence of Exascale Computing, Data Science and Visualization Towards Zero-Carbon Fuels for Power and Transportation*
  - 2:18 - *GASNet-EX RMA Communication Performance on Recent Supercomputing Systems*  
Paul H. Hargrove, and Dan Bonachea
  - 2:38 - *Design and Performance Evaluation of UCX for Tofu-D Interconnect with OpenSHMEM-UCX on Fugaku*  
Yutaka Watanabe, Taisuke Boku, Mitsuhsa Sato



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# Panel Discussion -- 3:30 – 5:00

- Panel Moderator

- Anshu Dubey - Argonne National Laboratory

- Panelists

- Rosa Badia - Barcelona Supercomputing Center
- Jacqueline Chen - Sandia National Laboratories
- Ethan Gutmann - National Center for Atmospheric Research
- Zhihao Jia - Carnegie Mellon University
- Bill Reus - US Department of Defense
- Damian Rouson - Lawrence Berkeley National Laboratory



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