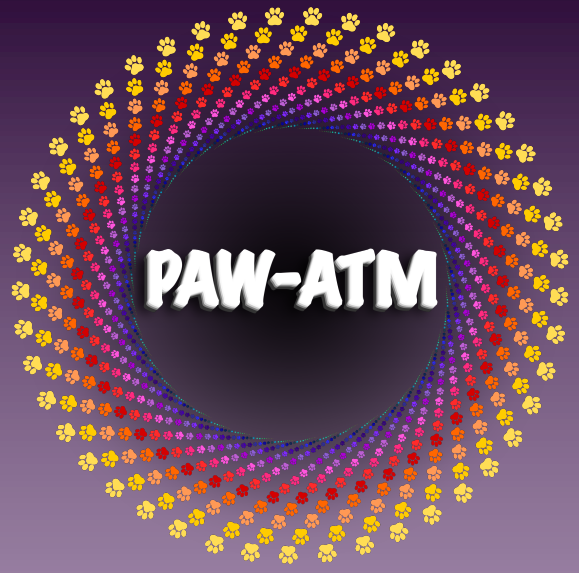
Parallel Applications Workshop, Alternatives to MPI+X

November 12th, 2020

Held in conjunction with SC20: The International Conference for High Performance Computing, Networking, Storage, and Analysis

In cooperation with:



Parallel Applications Workshop

Alternatives to MPI+X

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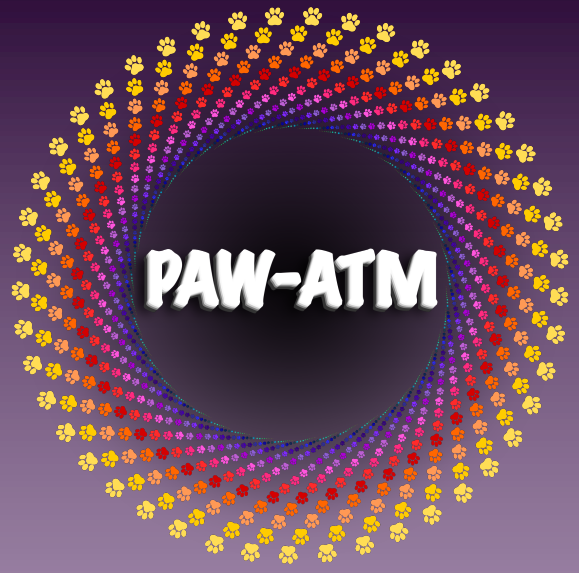
SC20 TCHPC

Organization

- Workshop Chair
  - Karla Morris - Sandia National Laboratories
- Organizing Committee
  - Rosa M. Badia - Barcelona Supercomputing Center
  - Bradford L. Chamberlain - Cray, a Hewlett Packard Enterprise company
- Program Committee Chairs
  - Bill Long - Cray, a Hewlett Packard Enterprise company
  - Sean Treichler - NVIDIA
- Advisory Committee
  - Salvatore Filippone - University of Roma "Tor Vergata"
  - Katherine A. Yelick - Lawrence Berkeley National Laboratory
  - Damian W. I. Rouson - Sourcery Institute



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Program Committee

- Scott Baden - University of California San Diego
- Rosa M. Badia - Barcelona Supercomputing Center
- Bradford L. Chamberlain - Cray, a Hewlett Packard Enterprise company
- Kyle Chard - University of Chicago
- Valentin Churavy - Massachusetts Institute of Technology
- Magne Haveraaen - University of Bergen
- Engin Kayraklioglu - Cray, a Hewlett Packard Enterprise company
- Elisabeth Larsson - Uppsala University
- Bill Long - Cray, a Hewlett Packard Enterprise company
- Xavier Martorell - Barcelona Supercomputing Center
- Patrick McCormick - Los Alamos National Laboratory
- Esteban Meneses Rojas - National High Technology Center
- Karla Morris - Sandia National Laboratories
- Francesco Rizzi - NexGen Analytics
- Mitsuhisa Sato - RIKEN Advanced Institute for Computational Science
- Gabriel Tanase - Amazon Web Services (AWS)
- Kenjiro Taura - University of Tokyo
- Sean Treichler - NVIDIA

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Program

14:30 - Welcome and Introduction

14:33 - **Keynote:** *Performance Portability in the Age of Extreme Heterogeneity*

John Shalf - Lawrence Berkeley National Laboratory

15:10 - Break (10 minutes)

15:20 - **Session 1:** Task Graph Frameworks

16:10 - Break (10 minutes)

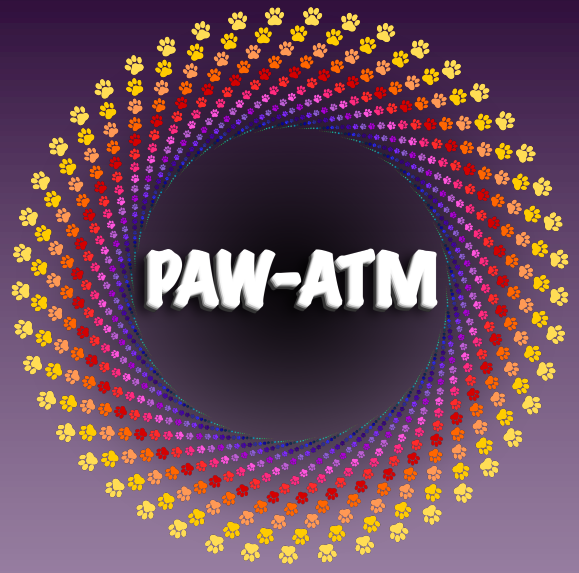
16:20 - **Session 2:** Scientific Simulation

17:30 - Break (10 minutes)

17:40 - **Session 3:** Programming Models

18:30 - Break (end of recorded program)

18:40 - Virtual Happy Hour



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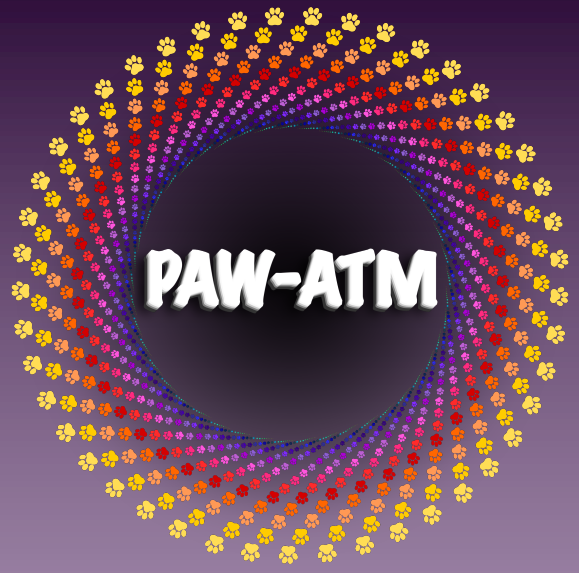
Break #1 - return at 15:20

- Please take a moment to give us feedback!
  - LINK https://tinyurl.com/paw-atm-eval (goes to official SC20 site)
  - Make sure to select “PAW-ATM 2020” from pulldown
- Join us for a Virtual Happy Hour after the workshop
  - Starts at 18:40 ET - Zoom link on PAW-ATM 2020 site
- Coming Up: Task Graph Frameworks

15:20 - *Hedgehog: Understandable Scheduler-Free Heterogeneous Asynchronous Multithreaded Data-Flow Graphs*
Alexandre Bardakoff, Bruno Bachelet, Timothy Blattner, Walid Keyrouz, Gerson C. Kroiz, and Loïc Yon

15:45 - *TaskTorrent: a Lightweight Distributed Task-Based Runtime System in C++*
Leopold Cambier, Yizhou Qian, and Eric Darve



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Break #2 - return at 16:20

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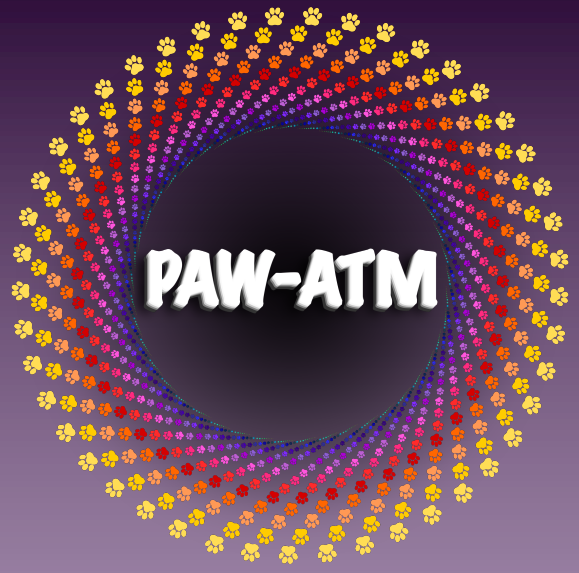
- Coming Up: Scientific Simulation

16:20 - *Evaluation of Multiple HPC Parallelization Frameworks in a Shallow Water Proxy Application with Multi-Rate Local Time Stepping*
Martin Bogusz, Philipp Samfass, Alexander Pöppl, Jannis Klinkenberg, and Michael Bader

16:45 - *Task-parallel in situ data compression of large-scale computational fluid dynamics simulations*
Heather Pacella, Alec Dunton, Alireza Doostan, and Gianluca Iaccarino

17:05 - *An Implicitly Parallel Meshfree Solver in Regent*
Rupanshu Soi, Nischay Ram Mamidi, Elliott Slaughter, Kumar Prasun, Anil Nemili, and S.M. Deshpande



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- Coming Up: Programming Models

17:40 - *HOOVER: Leveraging OpenSHMEM for High Performance, Flexible Streaming Graph Applications*
Max Grossman, Howard Pritchard, Steve Poole, and Vivek Sarkar

18:05 - *Exploring Hybrid MPI+Kokkos Tasks Programming Model*
Samuel Khuvis, Karen Tomko, Jahanzeb Hashmi, and Dhabaleswar K. Panda