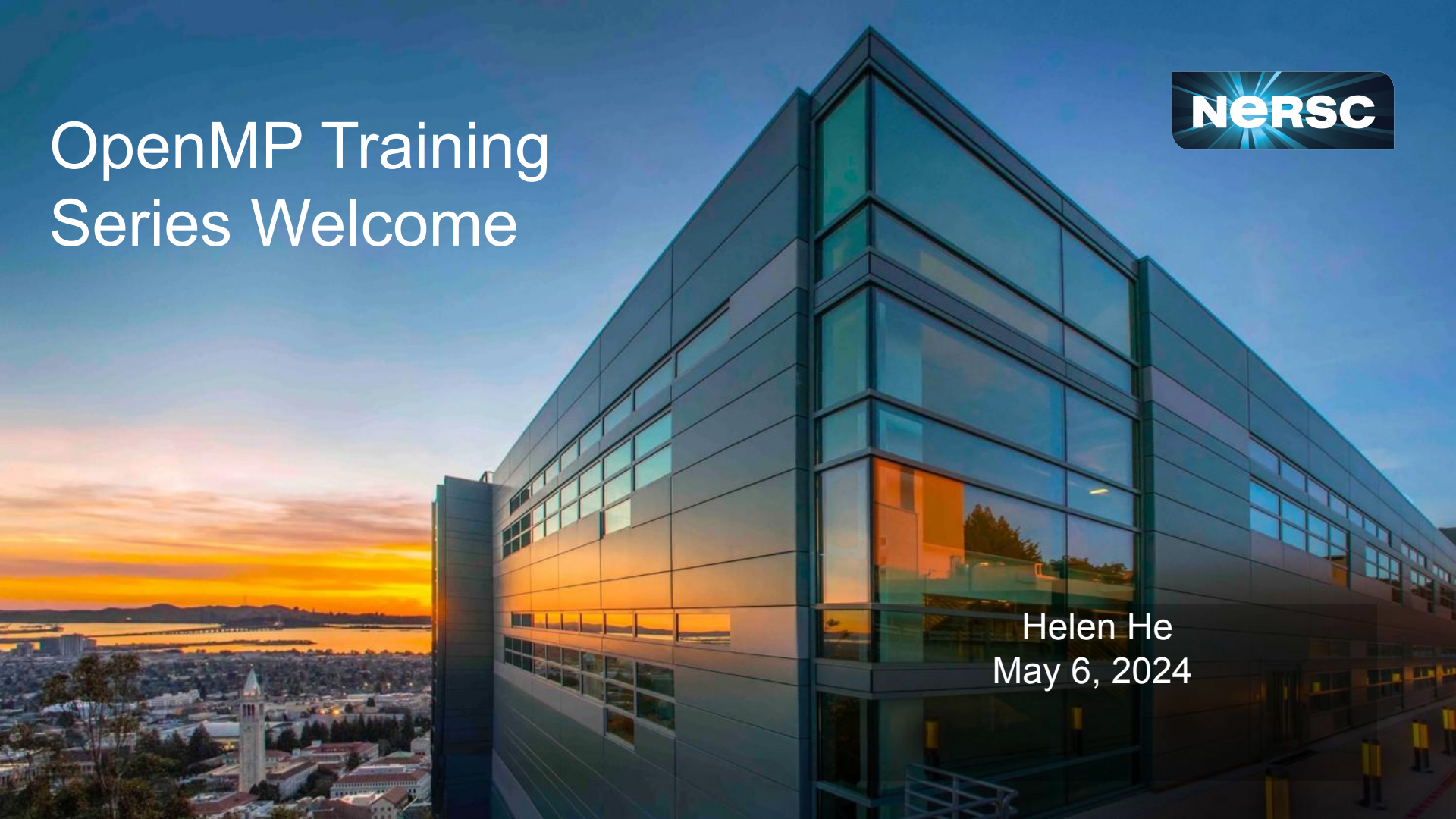
OpenMP Training Series Welcome



Helen He
May 6, 2024

OpenMP

- The OpenMP API is the de facto standard for writing parallel applications for shared memory computers supported by multiple scientific compilers on CPU and GPU architectures
- MPI+OpenMP for CPUs and OpenMP device offload for GPUs are recommended portable programming models on Perlmutter, Frontier, and Aurora

OpenMP Training Series

- Part of the NERSC/OLCF/ALCF Performance Portability Series
  - https://www.nersc.gov/performance-portability-series-2023-2024/

Session	Date
Advanced SYCL Techniques and Best Practices	May 30, 2023
HIP Training Series	August - October 2023
OpenMP Offload 2023 training, Part 1: Basics of Offload	September 29, 2023
OpenMP Offload 2023 training, Part 2: Optimization and Data Movement	October 6, 2023
Raja	October 10, 2023
Performance Portability for Next-Generation Heterogeneous Systems	February 26, 2024
AMReX	March 14, 2024
Kokkos	April 25-26, 2024
OpenMP Training Series	May - October, 2024
Other solutions	TBD

SYCL: June 20
Julia: June 18, 21
HPX: TBD

Introduction of Speakers

- Both Michael Klemm and Christian Terboven
  - OpenMP Language Committee members
  - Among a group of experts who regularly give technical talks and tutorials on OpenMP, at SC, ISC, IWOMP, and other HPC centers, etc.
- Dr. Christian Terboven
  - Leads HPC group at RWTH Aachen University as a senior scientist
  - Co-chair of OpenMP Affinity Subcommittee
  - Co-author of book "Using OpenMP - The Next Step", published by MIT Press
- Dr. Michael Klemm
  - Principal Technical staff in the Compilers, Languages, Runtimes & Tools team of Machine Learning & Software Engineering group at AMD
  - CEO of the OpenMP Architecture Review Board
  - Lead author of book “High Performance Parallel Runtimes: Design and Implementation”

Sessions and Topics

- Session 1: OpenMP Introduction (May 6)
- Session 2: Tasking (Jun 10)
- Session 3: Optimization for NUMA and SIMD (Jul 8)
- Session 4: What Could Possibly Go Wrong Using OpenMP (Aug 5, guest session from Ruud van der Pas)
- Session 5: Introduction to Offloading with OpenMP (Sept 4)
- Session 6: Advanced OpenMP Offloading Topics (Oct 7)
- Session 7: Selected / Remaining Topics (Oct 28)

Homework assigned for each session will be reviewed at next session

Follow-on sessions will become more advanced over time

Some Logistics

- Users are muted upon joining Zoom due to large number of attendees
- Please change your name in Zoom session as “first_name last_name (nersc_user_name)”, such as “Helen He (yunhe)”
  - Click “Participants”, then “More” next to your name to rename
- You can click the CC button to toggle captions and view full transcript
- Trainings are recorded. Feel free to unmute and ask questions
  - If prefer not to record your voice, please type questions in Slack
- Slides have been uploaded. Recording to be available in a few days
  - https://www.nersc.gov/openmp-training-series-may-oct-2024/
- Please join OpenMP-series-2024 Slack
  - #general: Q&A and discussions
  - #perlmutter-accounts: training accounts issues
- Please take our survey to help us improve!

NERSC Code of Conduct

As NERSC collaborators, we are all bound by the Code of Conduct:

- **Team Science**
- **Service**
- **Trust**
- **Innovation**
- **Respect**

- We agree to **work together professionally and productively** towards our shared goals while respecting each other's differences and ideas.
- We should all feel free to speak up to maintain this environment and remember there are resources available to **report violations** to foster an inclusive, collaborative environment.
  Email nersc-training@lbl.gov for any concerns

https://www.nersc.gov/nersc-code-of-conduct or search "NERSC Code of Conduct"