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ALCF Hands-on HPC Workshop

Nevin Liber

- Who am I?

- ❑ Computer Scientist at ALCF
- ❑ C++
- ❑ SYCL
- ❑ Kokkos
- ❑ Aurora
- ❑ Standardization
 - INCITS (US) C++ Committee
 - Vice Chair
 - WG21 ISO (International) C++ Committee
 - Co-Chair, Library Evolution Working Group Incubator (LEWGI / SG18)
 - Assistant Vice Chair, Library Evolution Working Group (LEWG)
 - Admin Chair
 - Khronos SYCL Committee
 - Chair, SYCL C++ Compatibility Task Sub Group (TSG)
 - Technical Expert (with Thomas Applencourt & Brice Videau)

Kokkos

- Initially part of the Exascale Computing Project (ECP)
- Now part of the High Performance Software Foundation (HPSF)
 - ❑ Linux Foundation
 - ❑ Foster broader development and adoption beyond the National Labs
- Influencing Standard C++
 - ❑ atomic_ref (C++20)
 - ❑ mdspan (C++23)
 - ❑ linear algebra / BLAS (C++26)
- Kokkos vs. SYCL
 - ❑ SYCL - vendor provided (compiler)
 - ❑ Kokkos - C++ library and ecosystem layered on top of various backends
 - SYCL is one backend

Kokkos

- Project home
kokkos.org
- Main repository
[github.com:kokkos/kokkos.git](https://github.com/kokkos/kokkos.git)
- Tutorial repository
[github.com:kokkos/kokkos-tutorials.git](https://github.com/kokkos/kokkos-tutorials.git)
https://github.com/kokkos/kokkos-tutorials/blob/main/Intro-Short/KokkosTutorial_Short.pdf
- Polaris instructions
github.com:argonne-lcf/ALCF_Hands_on_HPC_Workshop/tree/master/programmingModels/Kokkos