

Title: Infrastructure and Ecosystem Considerations for Quantum-Included Supercomputing Readiness

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As quantum computing advances toward early fault-tolerant systems, the focus previously reserved for device performance now includes how these systems can be incorporated into the broader advanced computing ecosystem. While integration is often framed in terms of latency or interconnects, the more pressing challenges are architectural and operational: how quantum resources are introduced, managed, and coordinated alongside HPC and AI within a coherent environment to support users' end-to-end resource needs.

This talk explores key infrastructure considerations for enabling “quantum-ready” supercomputing facilities, highlighting emerging ecosystem questions, such as boundaries between facilities and vendors, interoperability across heterogeneous systems, and the need for shared interface concepts to support evolving workflows. Finally, it reflects on the importance of aligning expectations with system maturity and developing practical pathways that support incremental progress.

Biography:

Laura Schulz is the Lead for Quantum Innovation at the Leadership Computing Facility at Argonne National Laboratory.

Her focus is on quantum-integrated heterogeneous systems and workflows. Before ANL, she was the department head of Quantum Computing and Technologies at the Leibniz Supercomputing Centre (LRZ) of the Munich Quantum Valley. In this role, she led several quantum-HPC integration efforts at the regional and European levels, was the lead author of LRZ's Strategic Plan for Quantum Computing, and the PI for Germany's EuroHPC Joint Undertaking project Euro-Q-Exa. She led multiple efforts toward integrating emerging quantum accelerators into several layers of the HPC ecosystem: from placement and residency in HPC centers, through hardware and software hybridization to user-centric adoption of quantum-HPC workflows and applications.