

QUANTUM TOPICS SEMINAR

BUILDING THE QUANTUM CONTROL STACK



ELISHA SVETITSKY, PHD

**QUANTUM MACHINES
SCIENTIFIC BUSINESS DEVELOPMENT MANAGER**

Control electronics are a critical component of quantum experiments, and their limitations frequently constrain the space of accessible research. These constraints typically do not stem from analog performance, but from underlying architecture designed for test-and-measurement applications rather than tight classical-quantum integration.

In this talk I will discuss the real-time control system developed by Quantum Machines. By combining classical processing, pulse generation, measurement, and feedback in a unique processor architecture, the control system is able to interact with quantum devices on coherence timescales. The talk will examine a number of use cases, including rapid device characterization and stabilization, analog feedback for quantum networks, maximizing QPU uptime with sophisticated initialization techniques, and laying the infrastructure for integrating full-fledged quantum computers within HPC centers.

**JANUARY 8TH, 2025 11:30-12:30 P.M. EST
BIRCK NANOTECHNOLOGY CENTER ROOM 1001**

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