



Contribution ID: 39

Type: **Talk**

IQM - Quantum error correction with star architecture QPU

Thursday 8 May 2025 15:45 (30 minutes)

The architecture of a QPU affects the performance of quantum error correction. The Star-configuration offers higher connectivity than the square-grid topology and thus enables more hardware efficient implementation of some error correction codes. We demonstrate error detection using a four-qubit code on a star-topology QPU. Our QPU features six superconducting transmon qubits coupled to a central resonator via tunable couplers. We apply two-qubit gates between pairs via the central resonator with a specific protocol based on qubit-resonator interaction. On this hardware, we characterize the lifetime, coherence time, and perform state tomography of the logical states.

Presenter: VIGNEAU, Florian