

Project SIQCI: Scalable Architecture for Ion-Trap Quantum Computing Integration

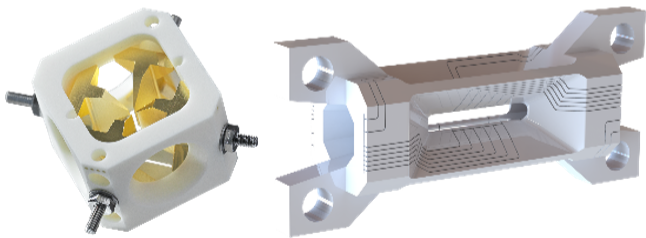
Alpine Quantum Technologies GmbH, Quantinum GmbH, Warsaw University of Technology

- Developing technology stack for ion-based quantum computing
- Building blocks for scalable devices with multiple processing zones and physical qubit operations
- Device-aware compilation and performance benchmarking



MICRO-STRUCTURED CHIP TRAPS

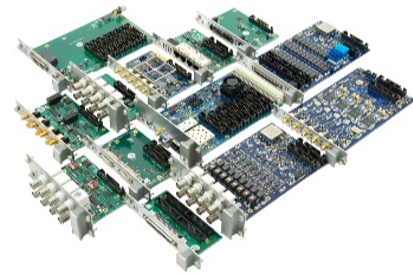
➔ www.aqt.eu/qc-modules/



- Development and production of a monolithic, three-dimensional ion trap with segmented electrode structure.
- Enabling of ion shuttling between several processor zones.

LOW-NOISE REAL-TIME CONTROL

➔ sinara-hw.github.io

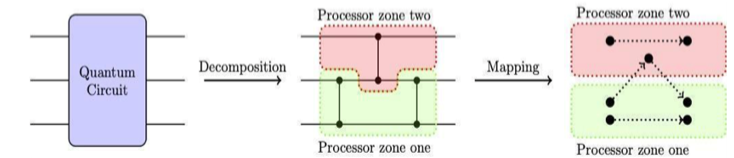


- Development of an FPGA subsystem for driving an in-vacuum cryogenic electronics stack that is tailored for operation of segmented ion traps.

EFFICIENT COMPILATION FOR SCALABLE ION TRAPS

➔ <https://github.com/CQCL/tket>

TKET



- Integration of the physical transport operations into tket™.
- Compiler pass optimizing taking into account trap topology and of operations fidelities.