

Joost van der Heijden - Control sequences with real-time feedback and chip packaging

Quantum Machines employs a tandem approach for quantum processor operations, supplying both room-temperature electronics and cryogenic signal handling. At room temperature, QDAC II enables tuning qubits with low-noise voltages at an ultra-stable regime. Once tuned, the quantum control can be seamlessly handed over to OPX. This unparalleled hardware system runs even the most complex quantum algorithm in real-time and right out of the box - from routine calibrations to quantum-error correction. At cryogenic temperatures, the QCage chip carrier for superconducting QPUs provides one of the most advanced interfaces to connect the qubit chip to the external world, ensuring a high input/output lines ratio, reducing radiation noise, and assuring thermalisation of the chip. Quantum Machines is highly experienced in working with experimentalists in their labs to develop qubit and read-out calibration algorithms, which apply qubit control pulses with real-time feedback. This access to the full chain of qubit operation signals is an unprecedented capability, positioning Quantum Machines as the leading candidate for quantum control solutions.