

# Computer Arts/Quantum SGs Joint Meeting

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Established 1957

Lengthy Royal Charter, summarised as  
“Making IT Good for Society”

A very broad remit, as this meeting exemplifies.

Also extends to “Digital Divide Specialist Group” and many others

A fast-moving growth area in all sorts of ways, notably quantum sensing.

UKRI's 4-year plan has >£1B in quantum research.

Despite the hype, quantum computing is *not* the flagship here. But it is advancing in (at least) two directions.

**Adiabatic** and quantum annealing, an optimisation technique. D-Wave, Oxford Quantum etc. Customers include Delta airlines.

**Gate-based** qubits etc. Potentially very dramatic speedup on specialist tasks

**Breaks** current public-key cryptography (RSA, ECDSA, Diffie–Hellman etc.)

**But** Very error-prone, and will need  $\times 10^{12}$  improvement in reliability before it delivers on these.

**Optimisation** In use already. Powerful, especially mixed integer–linear programming

**Simulation** Especially materials, proteins etc. Tends to be specialist hardware, but very effective where classical computing fails.

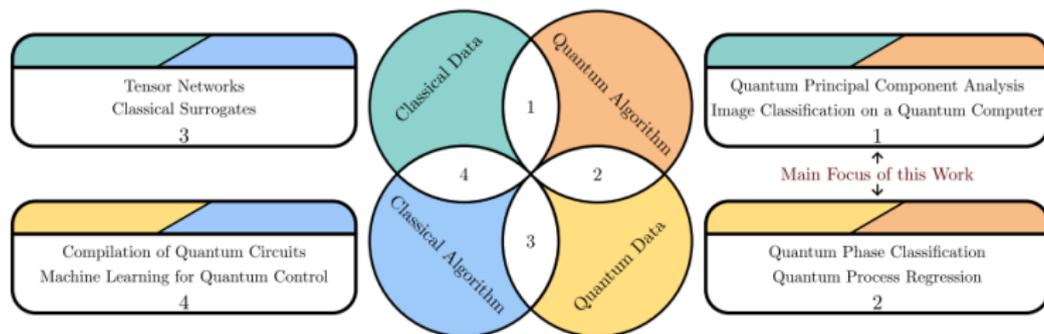
**Cryptography** Not clear (error correction!) but we **must** allow for this, hence **post-quantum cryptography**

**Machine Learning** A great deal of hype in this area,



Most ML is data-heavy and (comparatively) compute-light; Quantum-computing is good on computing and poor with data.

# Quantum Machine Learning



<https://arxiv.org/pdf/2511.15969>

Established 2025.

Initial event was scheduled 25 March 2026:

<https://www.eventbrite.co.uk/e/hybrid-quantum-computing-current-state-overview-quantum-computing-sg-tickets-1983864909348>

Hybrid: Quantum Computing Current State Overview  
— Quantum Computing SG

What is Quantum Computing? Why do we need it?

The emergent state of the technology.

Trends. Risks, challenges and opportunities.

Tube strike: current plan: maintain as hybrid