Quantum Computation with Surface Acoustic Waves

- We have proposed a solid-state quantum computer based on the transport of individual electrons in the minima of a surface acoustic wave in a narrow channel.

- We aim to construct the building blocks of such a quantum computer:
  - a number of quantum dots travelling along adjacent channels;
  - electrostatic and magnetic gates to control and entangle spins.

- Each electron combines with a hole to give a polarised photon for read-out.
- Much important physics can be discovered by learning to manipulate qubits.

Contact: Dr Chris Ford (cjbf@cam.ac.uk) or Dr Crispin Barnes, (chwb101@cam.ac.uk)