Hole spin qubits in germanium

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Holes in germanium have emerged as a compelling platform for quantum computing. The low-noise and uniform environment provided by buried quantum wells enabled to define arrays up to 16 quantum dots, while the spin-orbit interactions allows for high-fidelity one and two-qubit gates. Furthermore, different quantum dots can exhibit different quantization axis, enabling hopping-based qubit logic, as originally proposed by Loss and DiVincenzo in 1998. Holes in germanium thereby alleviate the need for additional components such as nanomagnets, while they can be operated using baseband control. In this presentation, I will focus on the opportunities and challenges that lay ahead in scaling spin qubits in germanium, guided through experiments on multi-qubit devices.