

Propositions

accompanying the dissertation

Engineering silicon spin qubits

by

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1. Operating semiconductor spin qubit devices at 100 mK temperature scales is the easiest means of mitigating pulse-induced resonance shifts and transient changes in rf-reflectometry circuits.
(This proposition pertains to this dissertation)
2. On-chip magnets are a versatile means of engineering semiconductor spin Hamiltonians and should be pursued further.
(This proposition pertains to this dissertation)
3. The reliable implementation of high-fidelity two-qubit gates in multi-qubit devices is the most urgent bottleneck in advancing spin-based quantum processors.
(This proposition pertains to this dissertation)
4. Sparse spin qubit arrays leveraging shuttling are more scalable than dense arrays.
5. The future of controlling spin qubits should be viewed through the lens of “bringing qubits to gates” rather than “bringing gates to qubits”.
6. Basic economic principles are underused in decision-making by research groups, to the detriment of scientific and technological progress.
7. Populist and far-left or far-right parties should be welcomed into, not shut out of, coalition governments to both moderate them and avoid ostracizing their voter base.
8. The European zeitgeist is rightfully critical of many aspects of American culture but is too dismissive of the features that make it uniquely successful.
9. The phrase “paves the way” and similar trite idioms should be banished from scientific writing.

These propositions are regarded as opposable and defensible, and have been approved as such by the promotor Prof. dr. ir. L.M.K. Vandersypen and the copromotor Dr. E. Greplová.