Experts may disagree on the reasons behind its demise – from economics to heat death to quantum mechanics, but, they agree that the end of Moore’s Law is near. As the principle powering the information technology revolution for more than half a century, Moore’s Law leaves in its wake an urgent need for new paradigms to keep fueling innovation. This talk will focus on two areas of ‘more than Moore’ computing that are poised to usher in revolutionary science and technology – superconducting spintronics and quantum computing.

**Superconducting spintronics:** Unlike conventional electronics, which depend on electronic charges, spintronics uses electronic spins. Depending on the context, the use of electronic spins promises higher energy efficiency, enhanced functionality, higher speeds and lower noise compared to its charge based counterparts. Interfacing spintronic devices with superconductors can take these advantages to a new level by harnessing the dissipation free currents of superconductors. In this talk, I will describe our discovery of a long-range proximity effect in ferromagnetic nanowires which sets the stage for such ‘superspintronic devices’.

**Quantum computing:** Quantum known non-conventional computing hundreds of qubits being explored, particularly promising platform for device fabrication using this approach control over the placement and number the technology we have developed to A diode detector next to our qubit (see demonstrate single ion implant detector functioning), allows us to and deterministically control the a focused ion beam allows control of demonstrated successful sensing of the donor electron in transport measurements. Our demonstration has opened the door to immediate fabrication of two- donor devices, which has been a goal of the donor qubit community for over a decade.

These are two of the dozens of ideas being investigated that can enable us to keep following Moore’s Law in the figurative sense of ‘exponentially improving device functionality’ if not in the literal. As we step outside the confines of established technology, it is an exciting time for new exploration.

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