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### **Spintronics and Beyond\***

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Spintronics encompasses the ever-evolving field of magnetic electronics.[1] It offers the possibility to communicate via pure spin currents as opposed to electric charge currents. [2] The talk provides a brief perspective of recent developments to switch magnetic moments by spin-polarized currents, electric fields and photonic fields. Developments to reinvent today's semiconductor electronics depend on the exploration and discovery of novel nanostructured materials and configurations. The talk highlights select promising areas, featuring recent work at Argonne, [3] including complex-oxide-based Mott-tronics research [4] ferromagnetic-superconducting heterostructural opportunities, [5] and most strikingly, the realm of new cancer treatment approaches.[6]

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