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Atomic-Scale Electronics

MICHELLE SIMMONS, University of New South Wales

Down-scaling has been the leading paradigm of the semiconductor industry since the invention of the first transistor in 1947. However miniaturization will soon reach the ultimate limit, set by the discreteness of matter, leading to intensified research in alternative approaches for creating logic devices. We will present single atom transistors where we can measure both the charge and spin of individual dopants and discuss long term architectures to exploit their unique characteristics.