

Coherent Quantum Platform Crafted Atom-by-Atom on a Surface

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Atom-by-atom addressability using a scanning tunneling microscope (STM)[1] has enabled bottom-up design of functional quantum devices. Furthermore, recent advance of a STM equipped with electron spin resonance allows an atomic scale characterization of quantum states of individual spins on surface with an energy resolution down to nanoelectronvolt.[2,3] In this talk, I aim at an introduction to coherent quantum platforms crafted atom-by-atom using an STM: First, utilization of single spins for sensing quantum objects with an atomic precision and a 10 neV energy resolution.[4] Second, coherent multi-spin systems using tailored spin nanostructures on a surface, driven and read out in an all-electrical fashion.[5] A survey on challenges in hand and outlook of this noble coherent quantum platform will be followed.[6]

References

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