Quantum Coherent Phenomena at Nanoscale



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Atomic scale scanning tunneling spectroscopy with superconducting tips

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The scanning tunneling microscope (STM) allows for a rather unique control over matter at atomic scale. By measuring at very low temperatures, it also serves as a spectroscopic probe of low energy phenomena, such as superconductivity. As such, the STM can measure all known features of superconducting tunneling, namely density of states, inelastic tunneling, Andreev scattering and Josephson effect. I will review results obtained with this technique and discuss recent insight obtained in atomic scale Josephson junctions and in unconventional superconductors.

Primary author(s): SUDEROW, Hermann (Universidad Autonoma de Madrid)

Presenter(s): SUDEROW, Hermann (Universidad Autonoma de Madrid)

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