



Physical Sciences Seminar

Quantum Science with Single Atoms on Surfaces

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Host: Johannes Fink

Scanning tunneling microscopy (STM) has proven to be an excellent tool to access and manipulate the nanoworld. Nevertheless, up to now it did not allow for coherent manipulation of spin systems as it is common in other architectures. In this talk I will introduce how we establish a new framework for quantum coherent control and magnetic sensing of single atoms by combining electron spin resonance and STM. For instance, this technique can be used to sense the magnetic coupling between atomic spin centers and also to detect the hyperfine interaction between their electron and nuclear spin. I will point out how we will extend this technique to a universal atomic-scale sensor to study magnetism in molecules and condensed matter systems and how to improve the coherent properties of these atomic spin systems.

In addition, STM can be used to map the electron transport in a sample with ultimate spatial resolution. In this way, it can reveal the electric resistance of localized defects such as grain boundaries. Here, I will discuss how we want to enhance this technique to access quantum transport phenomena on the atomic scale and probe the influence of single adatoms and defect centers.

Wednesday, February 13, 2019 10:00am - 11:00am

IST Austria Campus Mondi Seminar Room 2, Central Building



This invitation is valid as a ticket for the IST Shuttle from and to Heiligenstadt Station. Please find a schedule of the IST Shuttle on our webpage: http://ist.ac.at/fileadmin/user_upload/pdfs/IST_shuttle_bus.pdf The IST Shuttle bus is marked IST Shuttle (#142) and has the Institute Logo printed on the side.