Exploring antiferromagnetic order at the nanoscale with a single spin microscope

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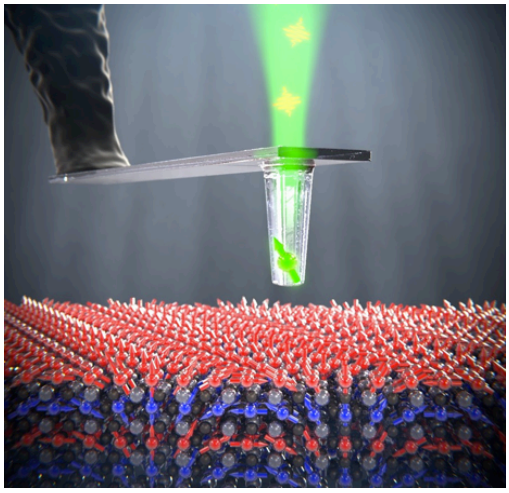
Experimental methods allowing for the detection of single spins in the solid-state, which were initially developed for quantum information science, open new avenues for the development of highly sensitive quantum sensors. In that context, the electronic spin of a single nitrogen-vacancy (NV) defect in diamond can be used as an atomic-sized magnetometer, providing an unprecedented combination of spatial resolution and magnetic sensitivity under ambient conditions. In this talk, I will illustrate how scanning-NV magnetometry can be used as a powerful tool for exploring condensed-matter physics, focusing on chiral spin textures in antiferromagnetic materials.

Keywords: quantum sensing, NV defect in diamond, spin relaxation, antiferromagnetic materials.



Magnetic microscope based on a single spin in diamond