



Physicists obtain images of atomic spin

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ATHENS, Ohio, April 29 (UPI) -- Physicists at Ohio University and Germany's University of Hamburg say they have captured the first images of atomic spin in action.

Associate Professor Saw-Wai Hla at Ohio University said the achievement is important since the emerging technology of spintronics may yield the next generation of faster, smaller and more efficient computers and high-tech devices.

The researchers used a custom-built microscope with an iron-coated tip to manipulate cobalt atoms on a plate of manganese. They said the images showed the atoms as a single protrusion if the spin direction was upward, and as double protrusions with equal heights when the spin was downward.

The scientists said their findings suggest researchers can observe and manipulate spin, thereby affecting future development of nanoscale magnetic storage, quantum computers and spintronic devices.

"Different directions in spin can mean different states for data storage," said Hla. "The memory devices of current computers involve tens of thousands of atoms. In the future, we may be able to use one atom and change the power of the computer by the thousands."

The study's lead author, Andre Kubetzka of the University of Hamburg, added, "The combination of atom manipulation and spin sensitivity gives a new perspective of constructing atomic-scale structures and investigating their magnetic properties."

The research team included Stefan Heinze and Paolo Ferriani and the study is reported in the early online edition of the journal *Nature Nanotechnology*.

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