

Here come the nanoSQUIDs

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A French scientific team says it has developed the first nanoSQUID -- or superconducting quantum interference device -- for measuring magnetic fields.

Wolfgang Wernsdorfer and colleagues at the Louis Neel Laboratory in Grenoble, France, say a SQUID consists of a loop of metal that is cooled to near absolute zero so that an electrical current can flow through it without meeting resistance. For such a loop to work as a SQUID it also needs to contain two "junctions" that act as obstacles to such a supercurrent.

The nanoSQUID built by Wernsdorfer is said to be unique in that it uses carbon nanotubes to form the obstacles.

Those hollow tubes of carbon atoms -- with diameters of one-billionth of a meter -- are about 10 times narrower than the smallest junctions used in previous SQUIDs. In addition to measuring magnetic fields, the scientists say their nanoSQUIDs could also be used to explore many fundamental phenomena in quantum physics.

The research appears in the inaugural issue of the journal *Nature Nanotechnology*.

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