



Impact

Ultrasensitive detector for physics and medicine

Ultrasensitive magnetic detectors offer new ways to diagnose medical conditions



Novel magnetic sensors can speed diagnosis of heart, brain and fetal conditions.
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NSF-funded research to discover fundamental particles and forces has led to a new tool with multiple applications including brain research, diagnosis of abnormal heart rhythms and pre-surgical imaging. Originally built to precisely measure very faint magnetic fields for basic physics experiments, the ultrasensitive detector, called an atomic spin magnetometer, has validated fundamental theories about the symmetry of space.

Furthermore, the device's ability to sense magnetic fields 1,000 times weaker than those in the human brain made it a candidate for additional applications in medicine and neuroscience. Two startup companies, TwinLeaf Precision Sensors and QuSpin, are advancing the technology for commercial use.

NSF Directorate(s):

Directorate for Mathematical & Physical Sciences

Locations

New Jersey


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Related Websites

QuSpin Technology: <https://www.nsf.gov/cgi-bin/good-bye?https://quspin.com/> <<https://www.nsf.gov/cgi-bin/good-bye?https://quspin.com/>>

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