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THE Awards 2019 – Research Project of the Year: STEM

Institution/Nominee	University of Nottingham in collaboration with UCL
Title	Quantum sensing the brain: Wearable neuroimaging
Key personnel	<p>From the University of Nottingham:</p> <p>Matthew Brookes Richard Bowtell Elena Boto Niall Homes James Leggett Ryan Hill Gillian Roberts</p> <p>From UCL:</p> <p>Gareth Barnes Tim Tierney</p>
URL	https://royalsociety.org/science-events-and-lectures/2018/summer-science-exhibition/exhibits/quantum-sensing-brain/
Submission	<p>A collaborative group of scientists from Nottingham and London has developed a new brain scanner, which can be worn on the head like a hat. This will open up unprecedented opportunities for studying a wide range of brain disorders, including childhood development, mental health, neurodegeneration and dementia.</p> <p>Based on a technique called MEG (magnetoencephalography), this device generates 3D images of brain activity as patients carry out mental tasks. The scanner is small, light, and patients can move freely during a scan. It is four times more sensitive than current scanners, and is cheaper.</p> <p>This represents a step change for brain imaging. A wearable instrument, adapting to any head shape means subjects can be scanned across the lifespan, from babies to elderly patients. Scanning people as they move enables study of brain function in a natural environment, whilst higher sensitivity will enable neuroscientists to more closely interrogate brain activity.</p>