

New method to detect prize particle for future quantum computing

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Quantum computing relies on the laws of quantum mechanics to process vast amounts of information and calculations simultaneously, with far more power than current computers. However, development of quantum computers has been limited as researchers have struggled to find a reliable way to increase the power of these systems, a power measured in Q-Bits.

Previous attempts to find the elusive Majorana particle have been very promising but have not yet provided definitive and conclusive evidence of its existence.

Now, researchers from the University of Surrey and the Ben-Gurion University in Israel believe they have uncovered a key method for detection of the Majorana particle, potentially enabling reliable Q-Bits to be developed. This new research proposes using photons (particles of light) and super-conducting circuits to probe and measure [semiconductor nanowires](#), where it is thought these particles exist at certain controlled conditions. If the particles are present, they will be revealed through a specific pattern with microwave spectroscopy.

Currently the most powerful quantum computer in existence has a power of eight Q-Bits. Once the particle is confirmed, researchers believe it will enable functioning topological Q-Bits to be produced, breaking the barriers on the way to scaling up quantum computation to many Q-Bits.

"We know what we are looking for, we just haven't found it yet - it's the

ultimate physics treasure hunt! We are confident that the method we are proposing will bring us closer to unlocking the untapped potential of [quantum computing](#) in areas such as code breaking, complicated mathematical problem-solving and scientific simulation of advanced materials" said lead-author Dr Eran Ginossar, the University of Surrey.

The new method has attracted the interest of leading experimental groups and it is hoped that the new [method](#) will be trialled within the next year.

Quantum computing is one pillar of quantum technology, an area where the UK is posed to make a large investment. Last year the government announced funding of £270million for the development and application of this technology.

Provided by University of Surrey

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