Researchers discover unconventional properties in quantum mechanical particle

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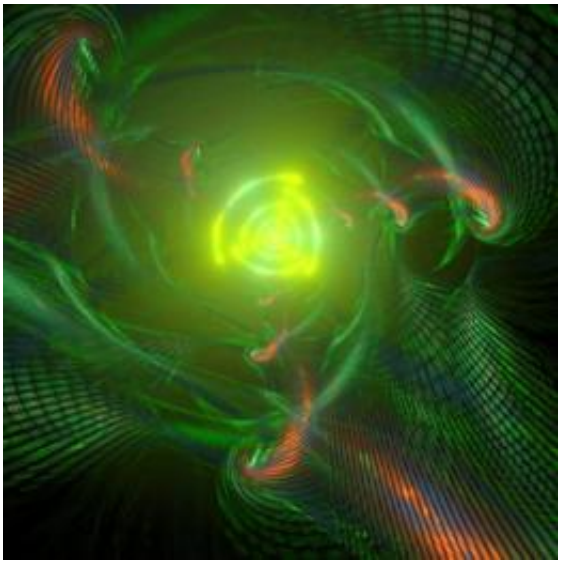

(PhysOrg.com) -- An international team of researchers studying the quantum mechanical particles has discovered some unusual properties that could aid the construction of quantum computers.

Physics PHD student Lauri Lehman, Macquarie University in a joint project with researchers from the University of Leeds and Microsoft Research were considering what happens when one particle - called an 'anyon' - is put into motion. After analysiing their results, they found that anyons move relatively slowly and behave more like a classical particle

moving around randomly.

Anyons are essential components in the development of quantum computers and were previously thought to behave like conventional quantum mechanical particles, which characteristically move very fast.

“This is a surprising result because you would expect anyons to behave like quantum mechanical particles. These are very unconventional properties for this type of particle,” said Mr Lehman.

The complex principles of quantum mechanics mean that the full implications of this research are still not fully understood. The properties of anyons are a subject of intensive research as physicists continue to explore quantum mechanics.

“This research is extremely interesting because it may provide the key to doing quantum computation in a way that is particularly well protected from the disturbances of the environment,” said Mr Lehman.

Researchers hope that this will help in the development of a quantum computer with capabilities far beyond even the most advanced modern supercomputers. It could also help physicists unravel some of the biggest mysteries of the workings of the universe by providing a way to possibly test quantum mechanics.

Provided by Macquarie University

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