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# Quantum Entanglement Confirmed by Ancient Starlight

[Laura Fyle](#) — August 23, 2018 [add comment](#) | 
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Researchers from the well-known MIT have experimented with the light from long-gone stars in order to prove that quantum entanglement is real.

The results will end a long standing back-and-forth debate on whether quantum entanglement is real and if it can be explained by the laws and principal of classical physics. It is suggested that if quantum entanglement is not real, the

universe could have anticipated billions of years ago that scientists will perform these experiments in 2018.

### What is quantum entanglement?

According to its theory one particle can have such a powerful connection to another particle that analyzing one of them would instantly send information about the test to the other particle, no matter how far apart they are. The theory has been dismissed as false by a large part of the scientific community since it appeared more than 100 years ago.

One particular adversary of the theory was Albert Einstein, dismissing it as "spooky action from a distance". Einstein argued that particles already have definite qualities before they are observed, and the two particles cannot influence each other since they are limited by the speed of light, according to the principle of local realism.

According to the laws of quantum mechanics the properties of a particle do not exist before they are measured. Even more so, when one particle is measured, all the linked particles will be instantly affected by that particular particle. This also means that the values obtained by the measurement are so similar that you cannot explain the event without turning to quantum mechanics.



A physicist named John Bell calculated the maximal limit on the level of correlation between two particles if the values are governed by local realism instead of quantum mechanics, with the result being called Bell's inequality. While Bell's experiment took place in the 1960's numerous experiments have proved the existence of values that are higher than Bell's inequality, leading to heated debates on the subject, with both sides arguing that the experiments validated the theory of quantum entanglement, on the one side, and that so-called loopholes were an undesired part of the experiment that can explain the results via classical physics.

One of the most popular loopholes theory is the "freedom of choice loophole". It states that the conditions in which an experiment is organized, from what particles are used, how they are identified, measured and observed can indirectly influence the results of the experiments. Advocates of this theory consider that negating this freedom of choice in quantum experiments is the only reliable to prove quantum entanglement.

Scientists from the Institute for Photonic Sciences in Spain organized the largest experiment that focuses on the freedom of choice loophole. Over 100,000 people participated in the study for which they played a video game. The results of the experiment published in May 2018 that the actions of the players were impossible to anticipate, making it an almost perfect experiment.

Approximately at the same time, researchers from MIT were exploring how to eliminate the loophole itself. For they plan the used the cosmos in order to eliminate any possible bias. The researchers used specialized telescopes in order to observe stars which were at least 600 light years away. Photons from those stars were analyzed in order to observe how they would be affected by entanglement. It was theorized that starlight from such a distance cannot be affected by hidden variables as it should have been influenced when the photons left the host star.

The research was followed by another experiment which measured light coming from two ancient quasars which were 7.8 and 12.2 billion light years away. The results dramatically reduced the significance of the loophole. Further experiments will take place in the future but the discovery is a big step in proving that quantum mechanics are real.

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**Laura Fyle**

Laura grew up in a small town in northern Quebec. She studied chemistry in college, graduated, and married her husband one month later. They were then blessed with two baby boys within the first four years of marriage. Having babies gave their family a desire to return to the old paths – to nourish their family with traditional, homegrown foods; rid their home of toxic chemicals and petroleum products; and give their boys a chance to know a simple, sustainable way of life. They are currently building a homestead from scratch on two little acres in central Texas. There’s a lot to be done to become somewhat self-sufficient, but they are debt-free and get to spend their days living this simple, good life together with their five young children. Laura is an advocate for people with disabilities.



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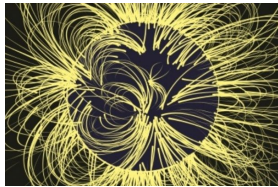
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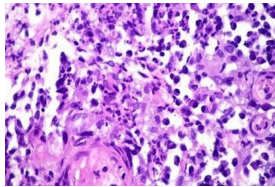
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