Experiments to prove the quantum entanglement

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Abstract

Quantum mechanics asserts the entanglement as a state of two or more interacting particles, which is maintained even in the absence of further interaction and despite their separation by vast distances. This situation was deemed “spooky” by Einstein and in 1935 he presented arguments suggesting that quantum mechanics may not be a complete theory. In 1964, John Bell formulated a theorem in the form of an inequality between certain measurement results, which could serve to distinguish among quantum mechanics and any yet-unknown theories that do not exhibit such “spooky” situations. Since then, several physicists conduct sophisticated experiments to verify or refute Bell's inequality, some of them being awarded the Nobel Prize.

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