Bell's theorem: entanglement, quantum teleportation, quantum cryptography, quantum computing and all that

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One of the most surprising aspects of quantum mechanics is that under certain circumstances it does not allow individual physical systems, even when isolated, to possess properties in their own right. ("entanglement"). This feature, first clearly appreciated by John Bell in 1964, has in the last three decades been tested experimentally and found (in most people's opinion) to be spectacularly confirmed. More recently it has been realized that it permits various operations which are classically impossible, such as "teleportation", secure-in-principle cryptography and massively parallel computing. I will review Bell's theorem, the idea of entanglement and some of the above applications.