Let’s start with the amazing but weird phenomenon in quantum realm, the quantum entanglement. This phenomenon so exciting that it has application such as super dense coding to sci-fi teleportation.

QUANTUM ENTANGLEMENT

Quantum entanglement is phenomena in which a pair of quantum particles are entangled which each other. Entangled mean they share unexplainable links which interconnects their properties, for instance quantum particles having half spin such as electrons they share connection in terms of spin. In other words spin entangle electrons are such that when we measure one electron’s spin we can determine the other’s just by knowing the first one’s spin. AS spin of electrons are in superposition in this phenomenon, quantum entanglement, seems like the electron are communicating with each other instantaneously this property seems to violate special relativity.

EPR-PAIR

epr-pair is nothing but a pair of entangled qubits. The qubits are placed in space such that they are many light years away. If we measure one qubit then we will get know other paired qubit’s basics state,0 or 1, even though we didn’t measure the other one. When it is measured the basics state are randomly chosen it seems like the two paired qubits are somehow communicating with each other instantaneously, in other words they are sending information about their collapsed state faster than speed of light. which violates basic foundation of special relativity. At starting they were thought that such pair wasn’t possible, but bell experiment proved them wrong.