

Possibility of Quantum Entanglement and EPR

Aayush Verma*

Department of Materials Science and Engineering, Massachusetts Institute of Technology (MIT),
Cambridge, USA

Perspective Article

Received: 24-Mar-2020,

Manuscript No. JPAP-23-8544;

Editor assigned: 27-Mar-2020,

PreQC No. JPAP-23-8544 (PQ);

Reviewed: 10-Apr-2020, QC No.

JPAP-23-8544; **Revised:** 19-

Jul-2023, Manuscript No. JPAP-

23-8544 (R); **Published:** 17- Aug-

2023, DOI: 10.4172/2320-

2459.11.3.006

***For Correspondence:**

Aayush Verma, Department

of Materials Science and

Engineering, Massachusetts

Institute of Technology (MIT),

Cambridge, USA

E-mail:

aayushverma6380@gmail.com

Citation: Verma A. Possibility of

Quantum Entanglement and

EPR. ResRev J Pure Appl Phys.

2023;11:006.

Copyright: © 2023 Verma A.

This is an open-access article

distributed under the terms of

the Creative Commons

Attribution License, which

permits unrestricted use,

distribution, and reproduction in

any medium, provided the

original author and source are

INTRODUCTION

Quantum entanglement is one of the precious puzzle for modern physics. By establishing it's monopoly over physics and computer, it is gradually becoming more hard to define. Recent achievements from experimental ground for entanglement have shown us a good possibility of it's existence.

We can define it's basis by using density matrix introduced by Paul Dirac and by using Bell's theorem.

$$|\psi\rangle \in H_A \otimes H_B$$

Because we are not discussing mathematical aspects for this system, we will not be going for a deep mathematics here. It is possible to have a two state superposition system for this Hilbert Space.

By little describing this theory, we have two state which is interdependent to each other's energy and other results. Suppose we have two particles with Ψ_a and Ψ_b got polarized from Ψ . Both particles are fermions, so after observing first particles let for say we get $\frac{1}{2}$ spin from wave function so particle B would automatically assign the value of opposite spin without any probability thing. So it get $-\frac{1}{2}$ spin. It not only spin thing, basically anything that can be contained in wave function can be suprisable.

DESCRIPTION

Okay, the question come, what is minimum distance for this action?, basically it is a spooky action for a distance, no matter in the galaxy or the other end of universe. Next question What is it's time to assign the state?, well this contradict the theorem of special relativity that speed of light can't exceeds and that made me to drive to look out for this topic. So at the other end of universe with information sharing with more than speed of light, how this is possible? [1].

Possible explanation was given by bell, after einstein, podolsky and rosen (Can Quantum-Mechanical Description of Physical Reality Be Considered Completely, Physical Review, Volume 47, 1395) criticized this spooky at a distance. Bell came up with the idea of hidden variable. Say how the information travels in this space-time fabric. A little complicated but we have achieved success in doing this [2].

This theory have obligations with Einstein and two of his colleagues who said it is a noncommutating operator and these wave functions are completely false description of physical reality. On his defence for relativity, he said there can't be local variables there must be some hidden variables [3].

$$|\psi\rangle \in H_A \otimes H_B$$

Bell came up with, Bells' inequality, it hold true for any local hidden variable system. However we yet have not understand as much this inequality. There are much more obstacles with quantum speed limit, quantum catastrophe and many more which making science challengable. We have a lot of studies going on in area of quantum cosmology too, where we are hoping to share information with intesllar or galatic media. It have it's applications with quantum computers too, Preskill, who described quatum computer on the base of quantum entanglements [4,5].

CONCLUSION

We have a lot of challenges, first of all we haven't any precise understanding of this theory, we feel difficulties while experimeting this two particle wave function entanglement test, we don't know how to observe wavefunctions good, we actually don't know why it happends, we have not understanding of this physical reality which is a reality or not a reality, we don't have any system to figure out the mathematical description behind the information system, we don't know whether it is a worm whole or a local whole or a hidden whole which is transferring things. We don't know.

REFERENCES

1. Anderson MH, et al. Observation of bose-einstein condensation in a dilute atomic vapor. Science. 1995;269:198-201.
2. Einstein A, et al. Can quantum-mechanical description of physical reality be considered complete? Phy Rev. 1935;47:777.
3. Datta A, et al. Entanglement and the power of one qubit. Phy Rev. 2005;72:042316.
4. Christandl M, et al. Uncertainty, monogamy, and locking of quantum correlations. IEEE Trans Inform Theor. 2005;51:3159-3165.
5. Devi AU, et al. Characterizing multiparticle entanglement in symmetric N-qubit states via negativity of covariance matrices. Phys Rev Lett. 2007;98:060501.