

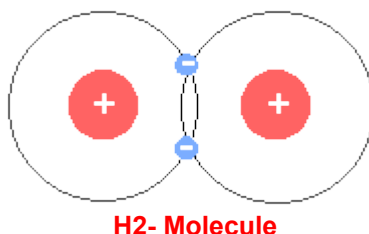
QUANTUM-ENTANGLED-BONDS

by: pmanzelli.lre@gmail.com; www.edscuola.it/lre.html ; www.wbabin.net

NOTES about the paper on “**ENTANGLEMENT IN QUANTUM CHALLENGE**” of Paolo Manzelli presented at the 3* **QUANTUM BIONET WORKSHOP (1)**

Abstract: In this introduction on the “Entanglement Quantum Challenge”, Egocreanet research team would propose to investigate the entanglement properties of resonating-valence-electron-bond states, which play a significant role to go over the mechanic approach of contemporarily scientific understanding.

Chemical bond is an attraction between atoms and allows the formation of chemical structure of molecular compounds.



The fundamental strong bonds are subdivided in (2) :

a) Ionic bonds based on the removal of one or more electrons from the less electron affine-atoms causing the formation of negative and positive ions that attract each other.

b) Covalent bonds are bond in which one or more pairs of electrons are shared by two atoms.

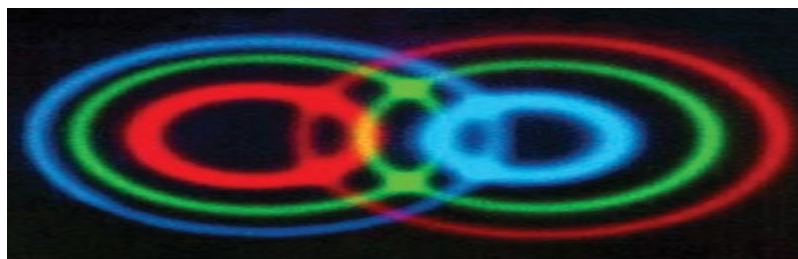
As a matter of facts covalent bonding is associated with the sharing or transfer of electrons between the participating atoms. Covalent bonding is a common type of bonding among external valence electrons atoms, in which the electronegative difference between the bonded atoms is small or non-existent as normally happen the organic or biochemical bonds.

Linus Pauling, (Nobel Prize in Chemistry 1954) get an advancement on the theory of chemical bond publishing the book *"The Nature of the Chemical Bond"* in 1937, and after with Gilbert N. Lewis and other scientists, he develop some key concepts of the Valence Bond theory based on the electron's resonance effect due to the electron orbitals hybridization.

According to the evolution of this approach by the *"Quantum Mechanics"*, till today, chemical research utilizes the Molecular Orbital Theory (MO theory), so that a covalent bond is formed between the two atoms by the overlap of valence atomic orbitals of each atom containing one unpaired electron. The overlapping of atomic orbitals can differ in the probability of interactions between positive nucleus and valence electrons generating two principal types of molecular bonding called *Sigma and Pi-Greek*. (3)

MO theory does not bend enough as the covalent bond, forming a region of high concentration by overlapping of bonding electrons, they do not repel each other, rather than favor to prevail the attractive binding force.

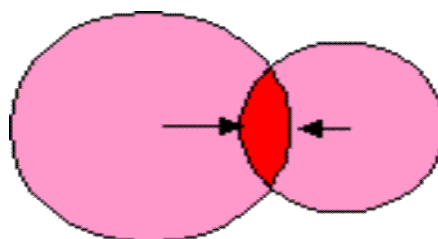
Today in the *"Age of Quantum Enaglement"* (4) is open an effective possibility to develop a new approach in quantum theory of chemical bond in bio-chemistry. In fact a net progress in the theory of covalent chemical bond is obtained by taking into account the Entanglement effect caused by between the dual nature of wave and particle of atoms and electrons.



Entangled photons

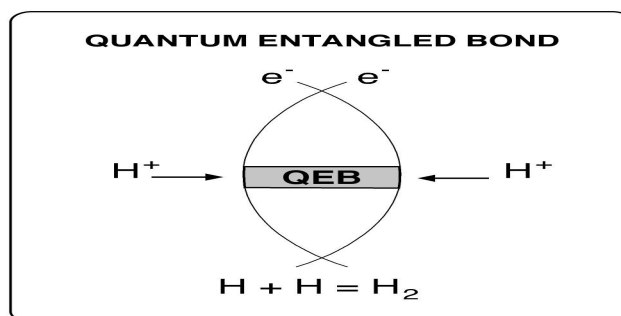
Entanglement in the chemical bond theory today (5)

The phenomenon of “Quantum Entanglement” is evident in critical condition in which the waves associated with particles are losing their kinetic mass, as when are trapped in a cavity. As a matter of facts a cave generated through wave/particle overposition represent a “quantum critical point”



Waves Overlapping-Cave

So for example when two hydrogen atoms (H^+) approach to form the H_2 molecule the overlapping negative areas creates a repulsion cavity in which for disruptive interference, waves lose their three-dimensionality in



space and generates a conversion of energy in two-dimensional information field called “information energy” (E_i) having the property of mirroring simultaneity of information in an extended field. (6), (7), (8)

Besides considering the up/down spins of two electrons it is possible to obtain that through the disruptive interference is reducing the wave matrix in a flat double subsystem containing in the interface “ E_i ”, which one section is a mirror image of the other one. Therefore, in similar way of what happen in the DNA double helix, the covalent bond spread an simultaneity of information along the entire bond field. So that the covalent bond as a memory device become capable of self-replication because the process is directed by the information field (E_i). Finally the rupture of the covalent bond is not only a consequence of a simple mechanic break, because happen if a new environmental conditions induces a positive wave’s interference producing a *disentanglement* effect and cancels the previous covalent bond formation .

Therefore we understand that the “field of information” that is created in the entangled conversion of energy, acts as an self organized information system of quantum bits, that is influencing the motion of valence electrons in order to obtain an attractive results of the covalent bond, therefore the bond is coming from a programmed self-organized balance of forces between electrons and nuclei. In this way become possible to consider an alternative but equivalent view about covalent bonds rethinking the **COVALENT CHEMICAL BOND AS AN ELECTRON-ENTANGLED STATE in order that can take advantage of the storing of quantum bit’s memories.** (9)

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