

PROPERTIES OF STRONG FORCE

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- :Abstract:-

The interaction to tie up together the smallest pieces matter is the quarks .David gross David politzer and Frank wilczek have through their theoretical contributions, According To their theories the interaction carriers the gluons have a unique and highly unexpected Property namely that they interact not only with the quarks but also with each other. This Property means that the closer quarks comes to close each other. The weaker the quark charge and weaker the interaction. Qurark comes closer to each to each other, when the energy Increases, so the interaction strength decreases with energy. This property is called asymptotic Freedom, means the negative beta function . On the other hand, the interaction strength Increases with the increasing strength.

Introduction:-

The interaction to tie up together the smallest pieces matter is the quarks .David gross David politzer and Frank wilczek have through their theoretical contributions, According To their theories the interaction carriers the gluons have a unique and highly unexpected Property namely that they interact not only with the quarks but also with each other. This Property means that the closer quarks comes to close each other. The weaker the quark charge and weaker the interaction. Qurark comes closer to each to each other, when the energy Increases, so the interaction strength decreases with energy. This property is called asymptotic Freedom, means the negative beta function . On the other hand, the interaction strength Increases with the increasing strength. Which means that a quark can not be removed from an atomic nucleus. The quarks carry the colour charges green , blue or red. for every quark there is an antiquarks in the same way as the electron has an antiparticle positive electron . Anti quark have the color charges antigreen, antiblue and antired. Combine of quarks their color neutral. The three quark in the proton(u,u and d) have different color charges so that the total charge is white(or neutral). Like eclectically neutral molecule can form bonds(interaction between their positive and negative Parts). The exchange of force between neutrons and protons in the nucleus occurs through The Color forces that leak out from their quark and force carrying particles.

My assumption-----If the energy increases to the quarks. On the other hand if the retarded force applied as a form of energy. The quarks goes to the closer another quarks so the interaction strength decreases with energy,

Now Here Einstein famous energy mass relation frequently applied, We have the rest mass

$$\text{Energy of quarks, } E=mc^2$$

In this relation, We can see that, $C = dr/dt$,

Here, m =mass of quark

$$C = \text{velocity of light} = \text{velocity of quark,}$$

Here, If the distance increases the interaction strength increases and if the distance decreases then the interaction strength decreases with energy.
The Strong force depends on two same types of distances between quarks of same path:-

- (1) Distance between the two quarks (along the line joining of the quarks)
- (2) Distance of travelling quarks (can be velocity of light— along the line joining of the quarks)

It should be noted that Higgs Boson(the mass less particle) is emitted or absorbed by the quarks Or Gluons. The Higgs field found extreme atomic nucleus. All systems (living or non living) in the universe are organized by Higgs Boson. When this mass less particle extinct from the nucleus, then the atoms destroyed.

References---Nobel prize winner in 2004 , David gross, David politzer, Frank wilczek