

The Higgs boson and the strong nuclear force explained with the Ether

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Abstract

The presence of an energy field filling vacuum has been ignored by the General Relativity Theory (GRT), although Physics reintroduces it under different names such as zero point energy, dark energy or Higgs field. This paper demonstrates Ether Physics easily brings simple explanations to the equivalence principle, the Higgs field and the strong nuclear force.

Keywords

Ether Physics, vacuum, mass, equivalence principle, Higgs field, strong nuclear force.

Introduction

The physical cause of gravity remains today a mystery. GRT assumes that the vacuum is really empty and that energy curves space but leaves many unanswered questions :

- 1) why is the speed of light constant ?
- 2) why energy curves space ?
- 3) how to explain the propagation of electromagnetic waves in a really empty vacuum ?
- 4) how to explain the equivalence principle between heavy mass and inertial mass ?

Modern Physics brings new unanswered questions :

- 5) what is the mass ? Does the Higgs boson really exist ?
- 6) how to explain the strong nuclear force ?

Background

Until 1905, vacuum was considered full of ether although Michelson and Morley officially failed to demonstrate its existence in 1887, with their assumption of Earth moving in a fixed Ether.

Ether Physics brings a simple and natural explanation to the transmission of electromagnetic waves in the vacuum.

Ref [1] demonstrates that assuming gravity is the gradient of Ether pressure brings the same results as the Schwarzschild metric, solution of Einstein's equation for a non rotating and isolated star.

It also demonstrates the curvature of energy density field is directly proportional to the matter volumic density through the relation :

$$\Delta P = \Lambda \cdot \rho_m \cdot c^2 \quad (1)$$

where Λ is Einstein's cosmological constant.

Finally, ref [1] concludes speed of light is not constant in a gravity field but varies according to ether pressure :

$$\frac{c^2}{P_0} = \frac{c'^2}{P} \quad (2)$$

where c, P_0 are respectively the speed of light and the ether pressure far away from any mass, and c', P the modified values in a gravity field.

Ether Physics also brings a very simple explanation to the equivalence principle :

In a gravity field, let's say $1g$, a body crosses the ether flow accelerated by the gradient of pressure according to the relation :

$$\vec{g} = -\frac{c^2}{2 \cdot P_0} \overrightarrow{\text{grad } P} \quad (3)$$

While accelerated by external forces at $1g$, the same body also crosses an ether flow accelerated at $1g$.

Particle Physics now considers mass is not an intrinsic property of matter but is due to the interaction of matter with an external field, the Higgs field, new name for the Ether.

Yet, Ether Physics already bring answers to three of the first four for questions and shows first statement is false.

Lets now bring answers to questions 5 et 6.

Accelerated mass in a perfect fluid

Relation (2) shows the Ether behaves as a perfect gas. Let's now assume Ether is a perfect fluid with no viscosity.

Fluid mechanics tells us that a body moving in a uniform translation in a perfect fluid at constant pressure in a zero-gravity field, remains in constant translation since the sum of all forces is zero.

But according to ref [2], Fluid mechanics also teaches us that a body accelerated by a force F in a perfect fluid at constant pressure undergoes a resistance of the fluid that is equivalent to an increase of the mass according to formula :

$$F = (\mu + \rho A) \frac{\partial v}{\partial t} \quad (4)$$

where :

μ is the mass of the body

ρ is the volumic density of the fluid

A is a coefficient depending only on the body's shape

ρA is the apparent increase of the body mass.

According to Particle Physics and to the equivalence principle, $\mu = 0$ since the mass is no more an intrinsic property of the body. The mass of a body is only given by the term ρA .

Ether Physics does not need Higgs boson to explain the concept of mass but only well known Fluid mechanics, but it raises one question: if ether is real, can we estimate the value of ether pressure ?

Strong nuclear force

The strong nuclear force is the strongest of the four fundamental forces. It is estimated to be 100 times stronger than the electrostatic force. The electrostatic force between 2 protons in an atomic nucleus is given by relation :

$$F_e = \frac{1}{4\pi\epsilon_0} \frac{q_1 q_2}{d^2} \quad (5)$$

where $q_1 = q_2 = 1.6 \cdot 10^{-19} \text{ C}$, $\frac{1}{4\pi\epsilon_0} \simeq 9 \cdot 10^9 \text{ m/F}$, $d = 2 \times 0.87 \cdot 10^{-15} \text{ m}$

This gives an electrostatic repulsive force of about 76 N, and thus, an estimation of the strong nuclear force between 2 protons of 7600 N.

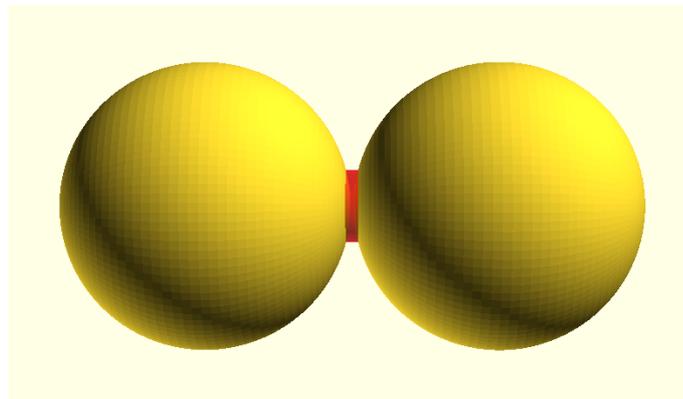


Fig 1 : two protons linked by the strong nuclear force

The physical meaning of relation (1) is that ether precipitates into matter.

Let's assume the strong nuclear force F is due to a pressure difference between the outside and the inside of the proton. The pressure difference P verifies :

$$P = \frac{F}{S} \quad (6)$$

Assuming the contact surface S has a radius of 1/4 of the proton's radius, $S = 1.5 \cdot 10^{-31} \text{ m}^2$ and $P \simeq 5 \cdot 10^{34} \text{ N/m}^2$ which can also be expressed in J/m^3 .

This pressure applied at the contact surface between two protons is also the pressure applied all over the surface of the protons, thus the pressure of the ether, more precisely, the pressure difference of the ether between the outside and the inside of the proton can be estimated to be $5 \cdot 10^{34} \text{ J/m}^3$.

This is a huge number, but Quantum Physics estimates the energy density of the vacuum is about 10^{113} J/m^3 while cosmology estimates dark energy density is about 10^{-9} J/m^3 so the correct value should be somewhere between these two values.

Let's now compare with the energy density of the proton :

$$\rho_E = \frac{m_e c^2}{4/3 \pi r^3} \quad (7)$$

with $r = 0.87 \cdot 10^{-15} m$ and $m_p = 1.67 \cdot 10^{-27} kg$

$$\rho_E \simeq 5 \cdot 10^{34} J/m^3$$

Energy density of the proton is found to be equal to the pressure of the ether, which indeed appears to be very logical to keep proton's energy concentrated.

Conclusion

In addition to providing simple answers to gravity, propagation of electromagnetic waves and equivalence principle between heavy mass and inertial mass, Ether Physics now brings very simple explanations to what is the mass and what is the strong nuclear force.

Energy density of Ether can even be estimated higher or equal to $5 \cdot 10^{34} J/m^3$ depending on the remaining internal pressure inside a proton.

References

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