

The Movement Structure of the Electron

Yvan-Claude Raverdy – Grenoble (France)

ycraverdy@gmail.com

Abstract

This short paper describe Electron as a vibrational standing field which is a solution of Maxwell equation. It is explained how internal kinetic momentum composition contribute to understand its wave nature and obtain part of normalization of the field . The second element to be considered is the wave number k_0 , only defined by Newton law following, inside a granular vacuum, to explain gravitation strength .

Introduction

This purpose, without any mathematical development, is based on referent article (reference 2) submitted on viXra (Hight Energy Particles Physics-22/08-0154) about electron mass calculation . It give some complements for a description of the electron structure assuming kinetic momentum composition . Most important is also to precise the idea concerning vacuum space as a granular fluid medium to support Newton law application for elementary particles . It seems to be a very interesting way to normalize electron wave as a standing solution of Maxwell equation and may be a direction for a novel gravitation theory .

Internal kinetic momentum of the electron

We have described the electron as a Vortex movement of the fluid governed by a decreasing wave along r axis, normal to symmetry axis of the Vortex . In paragraph 4 of reference 2, we derive the internal angular momentum as the sum of two components called m and s .

Component \mathbf{m} could be called *electro-magnetic momentum*, it represent inertial momentum projection, which is the integral of the product between mass, radius and c (speed of light), (see relation 5 in reference 2).

Component \mathbf{s} , so vector projection, is an *only-magnetic momentum*, whose integral act on a decreasing trigonometric function of radius r (see relation 6 in reference 2).

We can imagine the vortex movement as a combination of these two parts; first (\mathbf{m}) is rotational around symmetry axis, second (\mathbf{s}) is an oscillation on the center between central negative phase (which contain 90% of the energy) and first positive phase, this oscillation is the expression of the stationary character of the wave, it is equivalent with a kind of swinging of the symmetry axis. Result of calculation of the integrals \mathbf{m} and \mathbf{s} (relation 6) show that \mathbf{m} is about twice of \mathbf{s} , and that the composition of corresponding two vectors present an angle near 30° between their proper axis. Of course, these two movements have same periodicity and phase. The total angular momentum has a module which is $\mathbf{M} = \mathbf{m} + \mathbf{s}$, because \mathbf{m} and \mathbf{s} are vectors projections on \mathbf{M} axis, its normalization $\mathbf{M} = h/4\pi$ leads to precise the amplitude of the wave (relation 9 in reference 2), h is the Planck constant.

These novel points of view can be compared with some results of Dirac equation (reference 3).

Wave number \mathbf{k}_0 and Vacuum granular structure

Paragraph 5(reference 2), explain the relations between particles and Vacuum medium all around, this is an entirely novel concept. Its leads to consider the gravitational strength (Newton law) as produced by collisions with particles flux emitted by masses. These particles, called gravitons, are the dynamic form of fundamental components of the Vacuum medium. Main result of the analysis is \mathbf{l}_0 value which is the graviton dimension giving its cross-section

(formula 10), so it is possible to establish a criterion about Electron Vortex minimal opacity to gravitons . This result is obtained by the fact that plane vortex projection, which figure the wave function, is a surface which can be calculated (relations 11) . The criterion is that the wave number is the defined value k_0 , and so, its precise dimensions of the vortex . To follow Newton law, the opacity must be minimal because an excess of cross sections inside the vortex would produce more than one collision, inversely a default would not satisfy opacity criterion . In these two cases Newton law could not be followed as it is shown by gravitational strength calculation on page 6 in reference 2 .

Conclusion

We presented some complements to the reference 2 which give a formula for Electron mass calculation, it show a concrete image for this particle considered at a standing state . Internal movements, given by internal angular momentum composition, are basic for this description and they seem to imply the existence of a fluid medium to describe the particle as a Vortex inside . This concept express the fundamental Wave nature of Electron as, probably, all other elementary particles, it is an upper view than Louis De Broglie first formulation (reference 1) . We think that the opacity criterion, which implies the existence of gravitons (considered as fundamental components of this fluid), is a general point of view applicable for any particle . This concept of Vacuum Space is may be a start point for a novel Gravitation theory .

References

Reference 1 : Louis de Broglie. Recherche sur la théorie des Quantas. Masson, 1963.

Reference 2 : Yvan-Claude Raverdy . A formula for electron mass calculation based on new fundamental concepts and depending only

on four fundamental constants , viXra , Hight Energy Particles
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Reference 3 : Paul Dirac. The Principles of Quantum Mechanics.
Oxford University Press, 1930.