



**NEW LOOK AT
PHYSICAL FORCES**

**a test of an
alternative model**

by H.A. van Keulen



Dilemma.

The human mind is like water that can penetrate anything.
However, if it is captured into a rigid framework of thinking, it freezes.
Only an admirable crystallisation may be left.
But the penetrating ability has gone!

H.A. van Keulen

NEW LOOK AT PHYSICAL FORCES

a test of an alternative model

**Renewed version 2011
Copyright © H.A. van Keulen**

Preface

In the past century physics seemed to have had a fantastic development, resulting in a technological revolution that brought great welfare to an increasing number of people in the developed countries. It is alluringly, therefore, to call the now-a-days approach to physical reality extremely successful.

However, that may not be true in all senses!

Physicists mostly seize the possibilities which mathematics offer them when they want to describe the results of experiments, even the unexpected and not conceived ones. Though it became common with the descriptions of those experiments, one may not confuse that with an explanation, approaching these phenomena rather in terms of causality.

At this point physics may be less successful.

If physics is seen, in a mechanistic way, as *the knowledge of moving and meeting particles (particle physics)*, in particular, questions about the essence of the electric field and about the causal relations between electricity and magnetism, questions about the constancy of light velocity or about gravitation never got an explaining answer, but only a mathematical description. This means that the question about the exertion of force at a distance did not get a fully convincing answer, thus far.

The unbalance in nature between the closely related electrons and positrons is also still confusing, the more so as one becomes conscious of the fact that positrons are going in and out of nuclei with nuclear reactions, and that the charges of protons are exactly equal to those of positrons.

Time has come, I think, to return to the most common way to describe the surrounding world, namely the *telling way*. The calculating method has proved itself as being very successful for using nature, but hardly as a contribution to a better common understanding. Unfortunately, most of the scientific community preferred usage rather than understanding, missing in that way the higher order, more suitable for mankind.

When I decided to design and to test a new story about the fundamentals of nature, I realized that only a few elements are needed. The whole story can grow while looking for qualitative and quantitative consequences of those elements.

The elements of the story must embrace an answer on the following questions:

1. What is the essence of the electric field around the elementary charges?
2. Why do magnetic fields arise with moving elementary charges?

3. How must we see the elementary charges?
4. What kind of entity transports energy or forces between the elementary charges?
5. How must we look at the nucleons?

With the given personal answer on those questions, an answer on diverse other questions proved to be possible, like there are:

- what is gravitation?
- what is physical space?
- how can the velocity of light be a constant?
- where do the elementary charges come from?
- how do nucleons and nuclei arise?
- how do energy and matter interchange?

Most convincing of the told story is the consistency of the need to use the given answers, qualitatively as well as quantitatively, with the solutions of other questions.

Another conviction can be found with the emergence of the value of the gravity constant, as much as five times, with calculations on totally different models.

Moreover, a strong indication has been found that the forces inside nucleons and gravitation are coupled. Perhaps this points to a fundamental position of G in the construction of the universe.

A revealing result of the analyses is the need to see the transport of forces as a wave of colliding particles, like sound is transported inside a gas.

Last, but not least, there is the eccentric position of the electric point in the relation between elementary charges, that probably rules the total exchange of energy in matter.

The following report tests the elements and the derivatives of my story, the results of which look in advantage of causality. Of course, much attention had to be paid to the compatibility with the already known data of physical science. As for many people mathematics is boring, I recommend them to omit the formulas for the time being and concentrate on the results thereof. In that way the story comes clearly into sight, as can be seen in "A sketch of the Universe".

Despite the difficulty for someone outside physical science to make contact with scientists, especially about new insights, I still hope that the ideas, which are unfolded here, will once inspire a scientist to bring those ideas to growth in behalf of physics.



TABLE OF CONTENTS

paragraph	page
1. Introduction	1
2. The fundament of forces	6
2.1 The creation of energons	6
2.2 The exertion of force by energons.....	7
2.3 The elementary charges	8
- The period of <i>pp</i> -convergence; transversal positions; factor of Lorentz.....	9
- Axial positions of the points of action	10
- Spin of the elementary charges	11
- The reality of force exertion	13
3. The exchange of forces between elementary charges	14
3.1 Charges at rest.....	14
3.2 Charges with moderate uniform motion.....	15
3.3 Charges with high uniform motion.....	18
3.3.1 The force exertion with axial speed.....	19
3.3.2 The force exertion with transversal speed at constant distance.....	21
3.4 The maximum of transversal velocity for harmonious interaction.....	25
3.5 The relation between velocity and distance of two opposite <i>ec</i> 's	27
3.5.1 The role of the <i>ec</i> -spin	27
3.5.2 The role of the <i>ec</i> -dimension.....	28
3.5.3 The eccentricity of the electric point of <i>ec</i> 's	30
3.5.4 Restrictions, caused by the period of <i>pp</i> -convergence	31
3.5.5 The smallest distance between the <i>ec</i> 's	32
3.6 The magnetic field	34
4. Forces between electric currents in conductors	35
4.1 Straight, single-row conductors being in rest.....	35
4.2 Straight, normal conductors being in rest.....	37
4.3 Circular conductors, perpendicular to a joint axis and being in rest	39
4.4 Effect of perpendicular motion of parallel conductors on currents.....	43
4.5 The effect of current variation in parallel conductors	45
5. Consequences of the nucleonic <i>ec</i>-structure	48
5.1 The ratio between <i>ec</i> - and nucleon radius	49
5.2 The average relative velocity of neutron charges	52
- First approach	52
- Second approach	53
5.3 The amount of neutron charges	56
- First approach	56
- Second approach	57

paragraph	page
5.4	The dimensions of nucleons and <i>ec</i> 's 59
5.4.1	Balance and mutations of energy at the transformation of neutrons into protons 60
	- The neutron decay..... 60
	- The balance of energy 61
5.4.2	The radius of a proton..... 62
	- The idealised proton radius..... 62
	- The actual proton radius and the <i>ec</i> -densities..... 63
	- Linear factor of conversion for most efficient <i>ec</i> -packing of the nucleonic volume 64
	- The kinetic energy in nucleons..... 65
5.5	The average relative velocity of proton charges 66
5.6	The misunderstanding of the <i>ec</i> -radius 66
6.	Gravitation, as a result of the nucleonic <i>ec</i>-structure 67
6.1	Spin Compensation Defect by Conjunction 69
6.2	Implication of SCDC 71
6.3	The gravitational number 73
6.3.1	Global approach 74
6.3.2	Step-by-step approach, using the probability of <i>ec</i> -conjunction in nucleons 75
6.4	Derivation of the constant of gravity from the energon hypothesis, 1st equation..... 80
6.5	Frequency, wavelength and quantum of gravitational signals; 2nd equation of G..... 82
6.6	Relation between Einstein's view on space and gravitation..... 83
7.	The period of pulsation of the elementary charges 84
7.1	The variation of radius, charge and mass of an elementary charge..... 85
7.2	The derivation of whole-numbered ratio's in rotating <i>ec</i> -systems 85
7.3	The relation between the period of <i>ec</i> -pulsation and the proton model..... 86
7.3.1	Relation with the periods of <i>pp</i> -convergence..... 86
7.3.2	Relation with the curves of proton- <i>ec</i> 's..... 87
7.4	Relation between the period of <i>ec</i> -pulsation and poëls 88
8.	The harmonious game with integers by a proton and an electron 89
8.1	The relation between the energon hypothesis and quantum mechanics..... 91
8.2	The concept of quarks inside nucleons 95
9.	Dimension of energons and cosmological consequences 96
9.1	The demand of <i>pp</i> -density at the position of the orbiting electron of <i>H</i> -atoms in lowest state of energy 96
9.2	Demand of the intensity of <i>pp</i> -creation at the surface of the <i>pp</i> -source, inside the proton 97
9.3	Demand of acceleration of the orbital electron along the radius of the <i>H</i> -atom 97

paragraph	page
9.4	The inconsistency of the model with the existence of mass inside <i>ec</i> 's 98
9.5	The upper limit of the <i>pp</i> -radius 99
9.6	The lowest limit of the <i>pp</i> -radius..... 100
9.7	Some data, related to the <i>pp</i> -radius 100
9.8	Cosmological consequences of the diameters of fundamental particles 102
9.8.1	The <i>pp</i> -density in the universe 102
9.8.2	The instability of black holes at lowest dimensions..... 104
	- Proto-universe 105
	- <i>ec</i> -collision..... 105
9.8.3	The mass of the universe..... 107
9.8.4	Gravitational effects suggesting the existence of dark matter..... 108
	- Factor of tolerance..... 108
	- Factor of expansion 109
	- The gravitational barrier..... 110
9.8.5	Relation between the expansion of the universe, the creation of energons in matter and the Constant of Hubble 111
9.8.6	The cosmological constant..... 112
9.9	Planck's Constant..... 114
10.	The transmission of <i>EM</i>-signals by energon waves..... 115
10.1	The exchange of <i>pp</i> -signals at a rest situation 115
10.2	Reproduction of <i>pp</i> -codes in matter 119
10.2.1	Reflection 120
10.2.2	Refraction..... 121
10.2.3	Deflection 122
10.3	The Doppler effect 124
10.4	Relativity of signal transfer..... 126
11.	The physical space..... 129
	- Stabilisation and de-stabilisation of <i>ec</i> 's..... 129
	- Stabilisation of the density of the physical space 130
	- The bending of light by heavy masses 132
	- The volumetric condition for free <i>pp</i> 's 133
	- The inevitable birth of <i>ec</i> 's from high-density <i>pp</i> -clouds 133
	- The equal impression of the universe into each direction..... 135
	- 'Accelerating universe', an over-estimation of <i>c</i> during the early inflation 137
12.	Some data, obtained from the energon-hypothesis 138
13.	Explanations 141
	The factor <i>g</i> and the magnetic moment μ_e (§ 5.1)..... 141

paragraph	page
Justification of the dimensional derivation of r_e (§ 5.1)	141
ec-Densities in protons (Chapter5, page 63).....	142
Angular momentum of a hollow sphere (Chapter 6 - page 74)	142
The Universal Power Ratio (Chapter 6 - pages 82/83).....	143
Gravitational Quantum q_G (Chapter 6 - page 82)	144
Nucleonic Number N_E (Chapter 6 - page 82)	145
Loss of pp 's by force exertion (Chapter 9 - page 103))	147
Addition to Table 8 (Chapter 9 - page 105)	147
ec-Collision (Chapter 9 - page 107); pp -Density (Chapter 9 - page 111)	148
h ; Inertial mass; Planck-length ; the 'restoring'factor ; 3rd equation of G.....	148
Earth-orbiting velocity (Chapter 10 - page 128)	153
Surrounding pp 's (Chapter 11- page 131)	154
Equilibrium of energy and space; 4th equation of G (Chapter 11- page 133)	154
Energetic development of the proto-universe (Chapter 11- page 136)	155
Relation between M_{pp} and M_{ec} ; unstable black hole (Chapter 12- page 138).....	158
Addition to the cosmological inflation (fig.51 and fig.66)	161
General insights on communication by pp -signals	163
Application of the period of pp -convergence to the universe	163
The mysterious Constant of Gravitation; 5th equation	164
The anomalous acceleration of the Pioneer spacecrafts (Add. to § 9.8.4)	164
The tricky behaviour of C and the past and present of the universe.....	166
Comment on an idea of Teilhard de Chardin (the in- and outside power of matter).....	169
The Cosmological Constant causing Universal Equilibrium	170
Some additional basic aspects of energy-flow	171
Addition to basic thesis (Part 1)	172
Postscript	173
14. Supplement	i
Chapter 2 - page 12 (f_v)	ii
Chapter 3 - pages 16/17 (f_1 en f_2)	ii
Chapter 3 - pages 19/20 (A_v -axial)	vii
Chapter 3 - pages 21/23 (A_v -transversal)	ix
Chapter 4 - solution of some integrals.....	x
Chapter 4 - pages 36/39 (f_a)	xi
Chapter 4 - pages 44/45 ($f_{br(1/n)}$)	xi
Chapter 4 - page 45 ($f_{br(n/n)}$)	xiii
Chapter 4 - page 43 (numeric solutions)	xvii
Chapter 9 - page 106-107 (Data of Teyssier. Energy sun-particles)	xviii
Chapter 9 – page 170; solution of the point of time of the average gravitational effect	xx
15. A sketch of the Universe	a-e