Unification of the basic forces

Abstract:

This work shows that the fundamental forces are based on a single principle**,** which means that the long-sought unification of the fundamental forces has been achieved.

This innovative scientific breakthrough was made possible by the discovery of the hidden natural processes behind the theory of relativity. At the center is the real definition of the elementary charge, which leads to the natural values for the field constants. This allows the electrostatic force and gravitation to be combined and the strong interaction to be integrated into the model. These findings are confirmed by a detailed, functional description of the fundamental forces, which is based on natural and descriptive principles.

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This study received no external funding, no external datasets were used, and the author declares no conflicts of interest.

Introduction:

Scientists and philosophers have long debated whether the current theories of physics reflect our ultimate understanding of nature or whether there are still undiscovered, fundamental processes that lie hidden behind these theories. While the laws of nature seem to be comprehensibly described by existing theories, the deeper questions of "why" and "how does it work" remain unanswered.

"The following questions highlight the urgency and potential of these discoveries:

Force equals mass times acceleration: This formula has been known for a long time, but is it not time to question the true cause of this force and how it operates in detail?

Kinetic energy: We know the formula, but would not make sense to understand exactly how this energy is generated and where it is stored?"

Mass–energy conversion: Since Einstein’s famous formula, we understand that mass can be converted into energy. However, there is an urgent need to clarify where this energy is stored before it is released during nuclear fission.

These questions are not just theoretical or philosophical in nature**;** they reflect an exploratory urge for a deeper understanding of the world. Answering these questions is crucial, and the discovery of the fundamental natural basis behind existing theories represents a scientific breakthrough. This work reveals hidden processes and opens a completely new view of the laws of nature.

This analysis provides the key to a comprehensive solution. The starting point is electricity, which is defined abstractly by the term 'ampere'. By analyzing the cause of electricity, the natural property of the elementary charge is revealed, leading to a new interpretation of the field constants (permittivity, permeability and impedance) of vacuum as inherent properties of space.

This leads to the unification of the fundamental forces — electromagnetism, gravity and strong nuclear force—and shows that they can be traced back to a single, fundamental principle.

This opens up a deeper understanding of nature, which, in the future, will provide many answers to crucial, previously unanswered questions.

Basis: Electricity forms the basis of modern society**,** and its applications have been extensively researched. Despite this progress, electricity as a cause remains abstractly defined by the term "ampere". The natural cause of electricity and the definition of the elementary charge are not yet known.

Criticism/point of departure: The field constant permittivity, permeability and impedance of **a** vacuum are essential parameters in electrodynamics and magnetism and can be applied throughout space. It is plausible that these constants describe the fundamental properties of space. However, these quantities are currently defined abstractly using the unit "ampere squared", which makes them difficult to understand.

Speculation/derived action: An in-depth analysis of these field constants and the introduction of a natural definition of the elementary charge could lead to the conversion of the values defined via "amperes squared" into real space constants. These space constants **are** expressed in units of meters, kilograms and seconds, thus revealing the natural relationships.

1 Analysis of the conventional field constants, the natural definition of the elementary charge and the transformed definition of the field constants

This chapter analyzes the conventional field constants and shows that the field constants are dependent on the definition of the elementary charge. This shows that any elementary charge can be defined as long as the field constants are adjusted. An in-depth analysis leads to a possible natural definition of the elementary charge. This new definition of the elementary charge in the units of meters, kilograms and seconds leads to field constants with properties of pressure and density and momentum density for the impedance.

This chapter examines the conventional field constants and shows that their values depend on the definition of the elementary charge. The value of the elementary charge can be chosen arbitrarily as long as the field constants are adjusted accordingly. Through a detailed analysis, a possible natural definition of the elementary charge is found. This new definition in the units of meters, kilograms and seconds leads to field constants that have properties such as pressure, density and momentum density for the impedance.

1 Analysis of the conventional field constants

The field constants are conventionally defined with values according to (**1), (2), and (3)**.
The analysis of these field constants shows that all these values result from the force **F_0** from the definition of the current of 1948 with **F_Def** and the definition of the electron with **e (4), (5), (6)** (**N_C** is the number of electrons per ampere).

$e = 1.602 \times 10^{-19} C$ Elementary charge

$\mu_0 = 1.257 \times 10^{-6} \frac{kg \cdot m}{s^2 \cdot A^2}$ (1) permeability

$\varepsilon_0 = 8.854 \times 10^{-12} \frac{s^4 \cdot A^2}{kg \cdot m^3}$ (2) permittivity

$Z_w = 376.73\,\Omega$ (3) impedance

$c := \sqrt{\frac{1}{\mu_0 \cdot \varepsilon_0}} = 2.998 \times 10^8 \frac{m}{s}$ speed of light

F_Def = Basis of the definition of the ampere from 1948 $F\_Def := 2 \cdot 10^{-7} \cdot N$

F_0 = the force F_Def with the geometric relationship calculated back to the origin $F\_0 := F\_Def \cdot 2 \cdot Pi = 1.257 \times 10^{-6} N$

$\mu_0 := \frac{F\_0 \cdot s^2}{N\_C^2 \cdot e^2} = 1.257 \times 10^{-6} \frac{kg \cdot m}{s^2 \cdot A^2}$ (4)

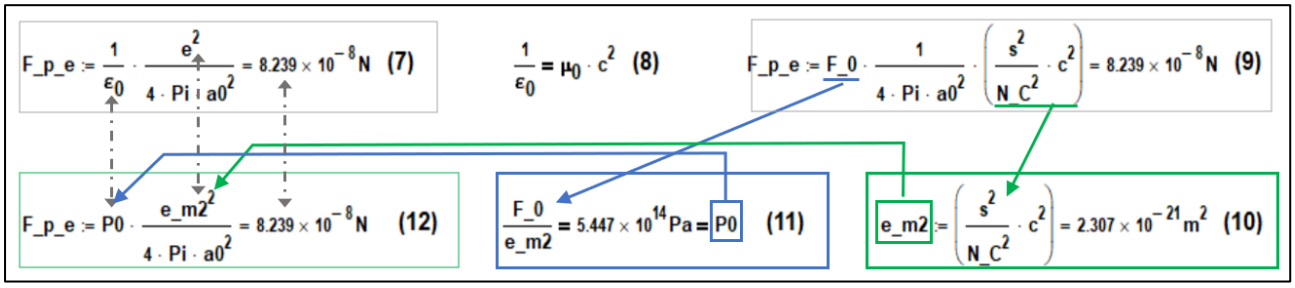
$\varepsilon_0 := \frac{N\_C^2 \cdot e^2}{F\_0 \cdot c^2 \cdot s^2} = 8.854 \times 10^{-12} \frac{s^4 \cdot A^2}{kg \cdot m^3}$ (5)

$Z_w := \frac{F\_0 \cdot s^2 \cdot c}{N\_C^2 \cdot e^2} = 376.73\,\Omega$ (6)

This shows that electrical engineering can be operated with arbitrary values for the elementary charge because the field constants adapt accordingly as a result of a changed definition. **An elementary charge defined with the basic units m, kg, s would inevitably lead to naturally recognizable properties of the field constants (space constants).** It is now a matter of finding the natural (and only correct) definition of the elementary charge.

1.1 The search for the natural definition of the elementary charge via the electrostatic force

From a real natural philosophical point of view, "attractive forces" are not possible. Therefore, the electrostatic force at the lowest level must ultimately be based on pressure and surface area. This natural relationship can be found by analyzing the equation for the force between an electron and a proton. The force between the proton and electron on the first orbit according to the Bohr atomic model is **F_p_e (7)**. In this formula, the permittivity **ε0** is replaced by the permeability **μ0** and the speed of light **c^2 (8)**. This leads to an interpretable form of the equation for **F_p_e (9)**. The analysis shows that this represents the normal radiation of a force **F_0** from the center. This force attenuates inversely to the spherical surface and generates a force on the surface at the location of the electron (analogous to illumination on distant surfaces). The electron is therefore recognizable as **e_m2 (10)**[i] shows. The force **F_0** at the origin must inevitably be composed of a second elementary charge and an as yet unknown further parameter, which results in **P0 (11)**. The result for the calculation of the force **F_p_e (12)** with the spatial property pressure **P0** instead of the reciprocal of the permittivity **ε0** agrees. This at least proves that electricity can be driven functionally and identically with this spatial parameter model.



Logically, the force on two conductors through which current flows, which is calculated with the new values for the elementary charge and field constants **(13)**, agrees with the results of conventional analysis **(14)**.

Dist := 1m Len := 1m $F_{L1\_L2\_em2} := \frac{P0}{c^2} \cdot \frac{\left(e_{m2} \cdot \frac{N\_C}{s}\right)^2 \cdot Len}{2 \cdot Pi \cdot Dist} = 2 \times 10^{-7}\,N$ (13) $F_{L1\_L2\_e} := \frac{1}{\varepsilon_0 \cdot c^2} \cdot \frac{\left(e \cdot \frac{N\_C}{s}\right)^2 \cdot Len}{2 \cdot Pi \cdot Dist} = 2 \times 10^{-7}\,N$ (14)

1.2 The natural field constants due to the newly defined elementary charge

If the value of the new definition of the elementary charge **e_m2** is now inserted into the determining equations **(4), (5) and (6)** for the conventional field constants, the new, adapted field constants **(14), (15) and (16)** follow from this. It is logical that these must be space constants. The properties of space are now shown as pressure **P0 (14b)** and density **rho_0 (15b)**. The wave resistance of space becomes the momentum density **rho_I0 (16b)**.

$\mu_{0\_em2} := \frac{F\_0 \cdot s^2}{N\_C^2 \cdot e\_m2^2} = 6.06 \times 10^{-3}\,\frac{kg}{m^3}$ (14) $\varepsilon_{0\_em2} := \frac{N\_C^2 \cdot e\_m2^2}{F\_0 \cdot c^2 \cdot s^2} = 1.84 \times 10^{-15}\,\frac{1}{Pa}$ (15) $Z_{w\_em2} := \frac{F\_0 \cdot s^2 \cdot c}{N\_C^2 \cdot e\_m2^2} = 1.82 \times 10^{6}\,\frac{kg}{s \cdot m^2}$ (16) $c := \sqrt{\frac{1}{\mu_{0\_em2} \cdot \varepsilon_{0\_em2}}} = 2.998 \times 10^{8}\,\frac{m}{s}$ (17)

permeability --> density reciprocal permeability --> pressure impedance --> pulse density speed of light

$rho\_0 := \mu_{0\_em2} = 6.06 \times 10^{-3}\,\frac{kg}{m^3}$ (14b) $P0 := \frac{1}{\varepsilon_{0\_em2}} = 5.447 \times 10^{14}\,Pa$ (15b) $rho\_I0 := Z_{w\_em2} = 1.817 \times 10^{6}\,\frac{kg}{s \cdot m^2}$ (16b) $c := \sqrt{\frac{P0}{rho\_0}} = 2.998 \times 10^{8}\,\frac{m}{s}$ (17b)

This achieves a first goal: a natural definition for the elementary charge and naturally understandable and clear definitions for permeability, permittivity and impedance. Interestingly, this also explains the constancy of the speed of light normally from the square root of pressure over density.

2 The natural functioning of gravity

This chapter addresses the adjustment of the gravitational constant and the introduction of an alternative pressure model for gravity. First, the traditional gravitational constant is corrected to a natural value by adding the factor 4*Pi. The gravitational constant consists of two factors: the representation of mass by area and a universal acceleration property of space. This provides a plausible explanation for how the gravitational force arises as a differential force due to asymmetries in space.

2.1 Analysis and correction of the gravitational constant

The usual formula for the force between two masses (mass of the sun **m_So**, mass of the earth **m_Erd** and distance between the sun and earth **r_SoEr**) is given by the formula **F_So_Er (29)**. However, the gravitational constant **Gx** must be corrected to the natural value. Any radiation from a point source to an object at a distance is always inversely proportional to the spherical surface with distance as the radius. The denominator of the gravitational formula must therefore be $\mathbf{r^2}$ *4*Pi, which means that the gravitational constant **Gx** must be extended by **4*Pi (30)** to represent the correct natural value again with the adjusted formula **F_So_Erd (31**).

$$F\_So\_Erd := Gx \cdot \frac{(m\_So \cdot m\_Erd)}{r\_SoEr^2} = 3.545 \times 10^{22}\,N \quad (29) \qquad Gx4Pi := Gx \cdot 4 \cdot Pi = 8.387 \times 10^{-10}\,\frac{m^3}{kg \cdot s^2} \quad (30) \qquad F\_So\_Erd := Gx4Pi \cdot \frac{(m\_So \cdot m\_Erd)}{4 \cdot Pi \cdot r\_SoEr^2} = 3.545 \times 10^{22}\,N \quad (31)$$

2.2 The pressure model of gravity

From a real, natural philosophical point of view, "attractive forces" are not possible. Therefore, the mutual "attraction" of masses at the lowest level would ultimately have to be based on pressure and surface area. A functioning pressure model results when the conventional equation for gravitational force is equated with a possible equation for a pressure model **(38)** and evaluated. At first glance, the conventional gravitational constant **Gx4Pi** must be a constant composed of two factors. With the known pressure, the factor **K_Gx (39)** can be calculated, which enables the representation of mass by area. The second factor **a_0 (40)** results in the fundamental "cause of the force"[1] on every mass in space in the form of an all-pervading acceleration property of space.

$$Gx4Pi \cdot \frac{m\_So}{4 \cdot Pi \cdot r\_SoEr^2} \cdot m\_Erd = P0 \cdot \frac{m\_So \cdot K\_Gx}{4 \cdot Pi \cdot r\_SoEr^2} \cdot m\_Erd \cdot K\_Gx \quad (38) \qquad P0 = 5.447 \times 10^{14}\,Pa \qquad K\_Gx := \sqrt{\frac{Gx4Pi}{P0}} = 1.241 \times 10^{-12}\,\frac{m^2}{kg} \quad (39) \qquad a\_0 := \frac{Gx4Pi}{K\_Gx} = 675.887\,\frac{m}{s^2} \quad (40)$$

In principle, the acceleration property **a_0** is the same as the pressure **P0**. Both represent the cause of the force on the mass. For the mass, **a_0** is the cause of the force; in relation to the mass represented as a surface, **P0** is the cause of the force.
Below is a numerical illustration of this relationship, which is based on the acceleration property of space on the Earth's surface. The environmental variable **U_Var_*** can be an acceleration property or a pressure of the space.

$$U\_var\_a := a\_0 \cdot \frac{m\_Erd \cdot K\_Gx}{4 \cdot Pi \cdot r\_Erd^2} = 9.807\,\frac{m}{s^2} \qquad F\_kg\_a := U\_var\_a \cdot kg = 9.807\,N \qquad U\_var\_P := P0 \cdot \frac{m\_Erd \cdot K\_Gx}{4 \cdot Pi \cdot r\_Erd^2} = 7.903 \times 10^{12}\,Pa \qquad F\_kg\_P := U\_var\_P \cdot kg \cdot K\_Gx = 9.807\,N$$

[1] Newton called this "accelerative force" and the analysis of Newton's original work shows that this "force" must have the property m/s^2.

2.3 The extension of the formula for gravitation to complete mechanics

Basis: The gravitational force is a differential force that results from asymmetries in space. The familiar formula is only a simplified representation of the actual phenomenon, as the underlying relationship between the differences often remains hidden. Therefore, the mechanism of gravity can only be fully understood if the nature of these asymmetries and differences is also clearly recognized.

The following is a detailed description of how the forces at the masses of the sun and the earth (effect) come about on the basis of the local cause, which is described by the environmental variable **U_Var_*_***. This force is caused by the respective environmental variable, consisting of the pressure difference or acceleration difference at the location of the respective mass.

This pressure difference or acceleration difference is in turn caused by the presence of the distant mass. This is identical to Newton's considerations in his original work (accelerating force).

$$U\_var\_Erd\_P := \left(P0 - P0 \cdot \frac{m\_So \cdot K\_Gx}{4 \cdot Pi \cdot r\_SoEr^2}\right) - P0 = -4.782 \times 10^{9}\,Pa \qquad F\_Erd\_P := U\_var\_Erd\_P \cdot m\_Erd \cdot K\_Gx = -3.545 \times 10^{22}\,N \qquad U\_var\_Erd\_P \cdot K\_Gx = -5.934 \times 10^{-3}\,\frac{m}{s^2}$$

$$U\_var\_Erd\_a := \left(a\_0 - a\_0 \cdot \frac{m\_So \cdot K\_Gx}{4 \cdot Pi \cdot r\_SoEr^2}\right) - a\_0 = -5.934 \times 10^{-3}\,\frac{m}{s^2} \qquad F\_Erd\_a := U\_var\_Erd\_a \cdot m\_Erd = -3.545 \times 10^{22}\,N \qquad \frac{U\_var\_Erd\_a}{K\_Gx} = -4.782 \times 10^{9}\,Pa$$

$$U\_var\_So\_P := \left(P0 - P0 \cdot \frac{m\_Erd \cdot K\_Gx}{4 \cdot Pi \cdot r\_SoEr^2}\right) - P0 = -1.436 \times 10^{4}\,Pa \qquad F\_So\_P := U\_var\_So\_P \cdot m\_So \cdot K\_Gx = -3.545 \times 10^{22}\,N \qquad U\_var\_So\_P \cdot K\_Gx = -1.781 \times 10^{-8}\,\frac{m}{s^2}$$

$$U\_var\_So\_a := \left(a\_0 - a\_0 \cdot \frac{m\_Erd \cdot K\_Gx}{4 \cdot Pi \cdot r\_SoEr^2}\right) - a\_0 = -1.781 \times 10^{-8}\,\frac{m}{s^2} \qquad F\_So\_a := U\_var\_So\_a \cdot m\_So = -3.545 \times 10^{22}\,N \qquad \frac{U\_var\_So\_a}{K\_Gx} = -1.436 \times 10^{4}\,Pa$$

This is the complete description of the mechanism for creating the differential force. The basic parameters (**P0, a_0**) are omitted, which makes it clear how the simplified formula of gravitation came about.

3 The force that holds the core together/the new value of strong interaction

The existing definition: A strong interaction, also known as a strong nuclear force or strong interaction force, is responsible for holding the protons and neutrons together in the atomic nucleus and typically acts at very short distances in the range of approximately one femtometer (10–15 meters).

The natural mode of operation: The new spatial parameters also change the concept of the force with which the atomic nucleus is held together. This force is now given by the space pressure **P0**. This also provides an explanation for the short range of this force. The pressure from the outside only exists when there is "tightness" toward the outside. As soon as the pressure can reach between the individual components, the force disappears.

This force is therefore also part of the unification of the fundamental forces, albeit not in a mathematical sense but only via the common natural cause.

4 Confirmation of the newly recognized values through experiments.

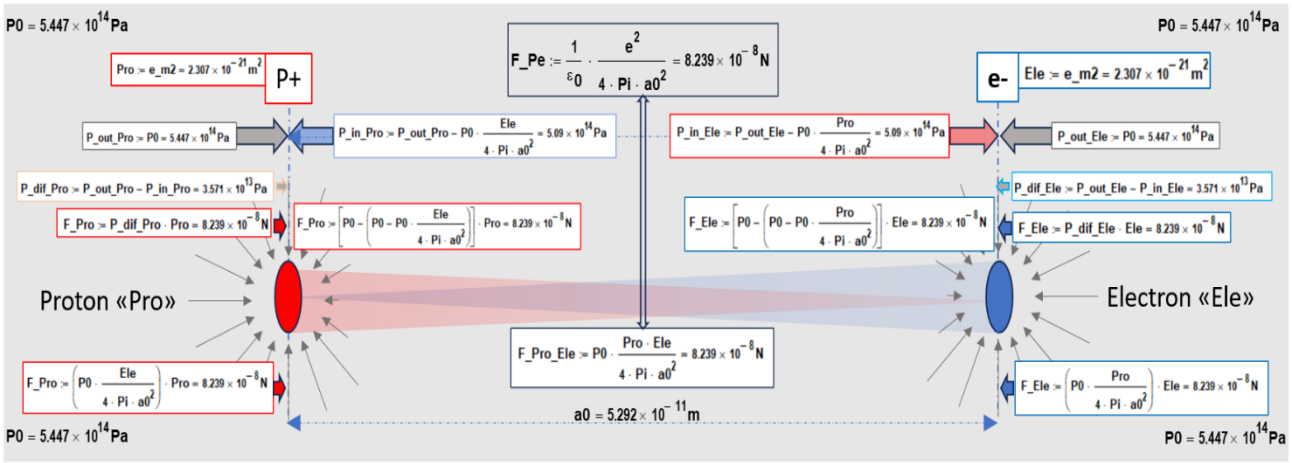
To confirm a theory, an experiment is usually required to test the predictions of the theory. However, in the case of new findings about already known phenomena, the results are often already available and can be used to confirm the theory. In such cases, the persuasive power lies not in new experiments but in the logical consistency and functioning of the theory.

The electrostatic force between two charges is created by shielding effects in a pressure field rather than by direct attraction. This perspective is illustrated via the interaction between protons and electrons in the Bohr atomic model.

The natural function of gravity is explained in a similar way by describing the effect of the sun on the Earth in detail. This shows how differential pressure forces lead to gravitational phenomena.

4.1 Confirmation of the new definition of the elementary charge via the natural explanation of the electrostatic force between two charges.

With the new value for the reciprocal permeability (pressure), the electrostatic force is shown to be a normal shielding of two surfaces against external influences in a pressure field with **P0**. The force between a proton and an electron in the first orbit of the Bohr atomic model is taken as a numerical example. The concept of "mutual attraction" of unequal charges is not correct. Unequal charges are "pushed together". In addition, each charge naturally has its own force, which is determined by its own environmental variable. It is logical that the surrounding variable is determined by the other charge. The proton **Pro** is in the general pressure field **P0** and shields the electron **Ele** from the external pressure of the general pressure field. The reduction (shielding) is inversely proportional to the spherical surface with a radius of distance **a0**. This results in a local pressure difference. This local pressure difference, together with the area of the elementary charge, results in a force.



4.2 Confirmation of the new space constants by the natural explanation of the gravitational force on the earth due to the presence of the sun.

With the new value for the spatial properties, gravity also appears to be an explainable force due to the mutual shielding of the masses in the pressure field with **P0** against external influences (outside of both masses). Each mass suffers its own force, which is determined by its own environmental variable. It is logical that the environmental variable is determined by the other mass. The forces are recognizable as pressure forces, so the masses are pushed together.

4.2.1 Confirmation through the work of Sir Isaac Newton

In his original work, Newton described an all-sided fundamental force (**F_all_***) on every mass **(a)**. He described in detail that the "accelerating force" (**a_force**) on the mass is determined proportionally by the amount of mass of the distant "sphere" **(b)**.

$F\_all\_So := a\_0 \cdot m\_So = 1.345 \times 10^{33}\,N$

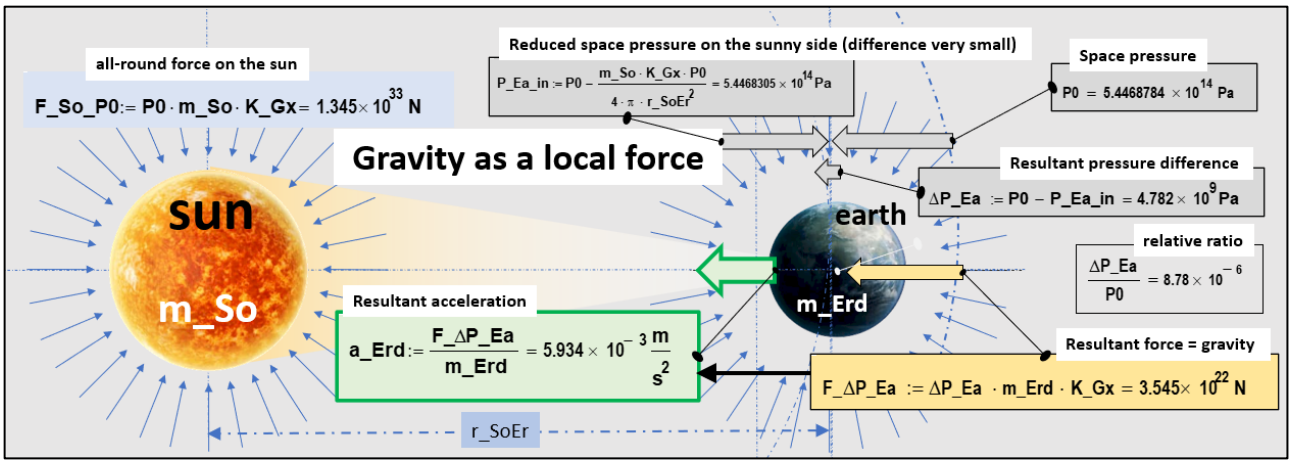
$F\_all\_Erd := a\_0 \cdot m\_Erd = 4.037 \times 10^{27}\,N$ **(a)**

$a\_Kraft\_So := \frac{a\_0 \cdot m\_Erd \cdot K\_Gx}{4 \cdot Pi \cdot r\_SoEr^2} = 1.781 \times 10^{-8}\,\frac{m}{s^2}$ **(b)** $a\_Kraft\_Erd := \frac{a\_0 \cdot m\_So \cdot K\_Gx}{4 \cdot Pi \cdot r\_SoEr^2} = 5.934 \times 10^{-3}\,\frac{m}{s^2}$

Consequently, Newton recognized the property of space as an acceleration property in relation to mass. Consequently, nothing new is presented here, but something natural that Newton had already understood and that has been forgotten over time as a result of the shift toward purely theoretical physics.

4.2.2 Confirmation of the function of the gravitational force on Earth

The force on the Earth due to the presence of the sun is shown as a numerical example. The explanation is as follows: the sun is in the general pressure field of **P0** and experiences the omnidirectional force of **F_So_P0.** The sun shields the earth from pressure from the direction "behind the sun". The result of this is a small reduction in pressure on the side of the earth facing the sun. Therefore, **P_Ea_in** is approximately 8 ppm lower than the effective external pressure **P0** on Earth. This results in differential pressure **ΔP_Ea** on both sides of the Earth's mass. The gravitational force results from this differential pressure on the mass of the earth (on each atom).



The whole correlation is shown in the two versions of the formula for the complete correlations with the pressure and acceleration in space. Since this correlation is not visible anywhere and the "shortened" formula also shows the correct result, this correlation remained hidden for so long.

$F\_Grav\_Erd\_P0 := P0 \cdot m\_Erd \cdot K\_Gx - \left(P0 \cdot m\_Erd \cdot K\_Gx - \frac{P0 \cdot m\_So \cdot K\_Gx}{4 \cdot \pi \cdot r\_SoEr^2} \cdot m\_Erd \cdot K\_Gx\right) = 3.545 \times 10^{22}\,N$

$\frac{P0 \cdot m\_So \cdot K\_Gx}{4 \cdot \pi \cdot r\_SoEr^2} \cdot m\_Erd \cdot K\_Gx = 3.545 \times 10^{22}\,N$

$F\_Grav\_Erd\_a\_0 := a\_0 \cdot m\_Erd - \left(a\_0 \cdot m\_Erd - \frac{a\_0 \cdot m\_So \cdot K\_Gx}{4 \cdot \pi \cdot r\_SoEr^2} \cdot m\_Erd\right) = 3.545 \times 10^{22}\,N$

$\frac{a\_0 \cdot m\_So \cdot K\_Gx}{4 \cdot \pi \cdot r\_SoEr^2} \cdot m\_Erd = 3.545 \times 10^{22}\,N$

5 The importance of this unifying theory

The unifying theory presented here shows that phenomena previously considered separate fundamental forces can be unified under a single natural principle. This not only simplifies the theoretical framework of physics but also provides a coherent explanation for various physical phenomena, including gravity, electrostatics and magnetism.

Electrostatic forces: The theory explains electrostatic forces as local effects caused by the mutual shielding of charges in a pressure field.

Magnetic forces: These forces can also be explained by local forces, which are based on the same basic principles as electrostatic forces.

Gravitation: Gravitational forces are explained as the result of local pressure differences in space, with the acceleration property of space playing a central role.

Strong interaction: The strong interaction, which is responsible for holding the atomic nuclei together, can also be integrated into this model and appears as part of the unified theory of fundamental forces.

5.1 Outlook for future research

The findings from this theory open promising prospects for future research:

- **Dark matter and dark energy**: The model offers new approaches to explain dark matter and dark energy as homogeneous pressure and density values in space.
- **Black holes:** This theory could explain unresolved contradictions in connection with black holes and limit the seemingly infinite gravitational pull to natural values.
- **Atomic structure:** New insights into the formation of the atomic structure and the Big Bang could be gained through the model.
- Space energy: The model suggests that space (vacuum) has an energy that is difficult to measure at approximately -270 °C (2.27 Kelvin).
- **Big Bang**: The process of "ignition" can be explained by a normal physical process due to different energy densities.

5.2 Application of the model to known phenomena

The theory also provides natural explanations for a number of other well-known physical phenomena:

- **Light waves**: Propagate in a medium that behaves like an invisible, ideal gas whose pressure and density determine the constant speed of light.
- **Light deflection** can be explained by a change in the refractive index of the medium in the vicinity of large masses.
- **Acceleration of a mass**: The force (F = m ∗ a) is generated by the transfer of momentum to the surrounding medium.
- **Kinetic energy**: The formula $\boldsymbol{E = \frac{1}{2} * m * v^2}$ is explained by the transfer of the kinetic impulse to the medium where the energy is generated, stored and released again.
- **Relativistic mass**: The formula $\boldsymbol{mrel = m0/\sqrt{(1 - v\text{^}2/c\text{^}2)}}$ is logically explained by the dynamic pressure in the medium, which increases as the energy transfer speed approaches.
- **Energy–mass equivalence**: Einstein's formula $\boldsymbol{E = m * c^2}$ is explained by the new model.
- **Equivalence of gravity and inertia**: Einstein's assumption that gravitational and inertial masses are identical is confirmed by the explanation of the underlying equal causes.
- **Big Bang**: The process of "ignition" can be explained by a normal physical process.

Conclusion:

The question of whether there are undiscovered fundamental processes hidden behind current theories has been answered. After a long and intensive investigation, the natural solution was found, revealing the common basis of the fundamental forces. This marks not the end, but rather the beginning of a new phase—the initiation of research based on a new paradigm, paving the way for further insights and discoveries.

Statement:

This work is presented 'as is'. The results are new and revolutionary. The presentation does not conform to the usual standards of scientific papers, just as the results do not align with generally accepted theories. The following tools were involved in its creation: Word and Excel by Windows, Mathcad 15, and, of course, ChatGPT to improve clarity and grammatical accuracy.

77 years old and deeply grateful:

The contemplative search for the natural processes behind the theories of physics has accompanied me for more than 65 years. My sincere thanks go to all the marvelous companions who have actively and positively supported me on my professional journey, aside from this quest. I am especially grateful to my wonderful, beloved wife, who has given me joy, peace, and a happy family. She created the environment that made this work possible. The PC tools have enabled me to put my thoughts down on paper in a meaningful way. In a special way, I am also particularly grateful to those who placed obstacles in my path, ignored me, and bullied me. They, too, have played a part in shaping the person I am today.

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Galileo Galilei said approximately four hundred years ago:

"All truths are easy to understand
once they have been discovered; the important thing is to discover them!"

Switzerland, Schaffhausen, September 19, 2024/Walter Ruh

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i The detailed derivation of these values and other old and more recent findings, finished and unfinished, correct and incorrect solutions and models, on these or other topics, also on the basis of mathematically supported philosophical considerations for a real and natural physics, can be found in several works under:

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