

Approach to the Introduction of a Universal Physical “Ether” Based on Subtle Matter

A consequence of the experimental verification of invisible space- and field-like subtle quanta and of the extension of the Special Theory of Relativity (SR) is the possibility to introduce in physics a universal subtle ether as the basis of universal spacetime. As is shown in short in the following, this allows the solution of various anomalies in present-day physics. On the one hand, Stephen Hawking states in the glossary of his book “The Universe in a Nutshell” (2001): “Ether: A hypothetical non-material medium once supposed to fill all space. The idea that such a medium is required for propagation of electromagnetic radiation is no longer tenable”. On the other hand, Einstein, in his 1920 lecture at the University of Leiden (see Einstein, “Äther und Relativitätstheorie”, Springer, speech of 27. Oct. 1920), concluded by stating:

"We may say that according to the general theory of relativity space is endowed with physical qualities; in this sense, therefore, there exists an ether. According to the general theory of relativity, space without ether is unthinkable; for in such space there not only would be no propagation of light, but also no possibility of existence for standards of space and time (measuring-rods and clocks), nor therefore any space-time intervals in the physical sense. But this ether may not be thought of as endowed with the quality characteristic of ponderable media, as consisting of parts which may be tracked through time. The idea of motion may not be applied to it."

Einstein continued proclaiming that the ether he was speaking about should be termed as "relativistic ether" or "new ether" to distinguish it from the "light-ether" thought of in the 19th century. It is remarkable that this statement of Einstein is ignored by Hawking and by the worldwide scientific community, and that, for example, no physical explanation for the curvature of spacetime (as basis of gravity, according to General Theory (GT)) is given in physics today because the assumed universal vacuum has no such property.

Based on the verification of field-like quanta of subtle matter, we hold onto Einstein's considerations and formulate, with the detected field-like quanta of subtle matter (see Table 1 in Appendix 5.1), a subtle universal, invisible yet real "relativistic ether" (see below),

yielding an internal frame of the visible Universe instead of the present-day assumption of a “universal vacuum”. Because it is known from astrophysical studies that universal spacetime exhibits at large scales an Euclidean structure, an orthogonal cubic $\pm m_P$ -lattice with face-centered $\pm m_S$ -quanta is chosen for the ether in which major coordinates intersect with angles of 90° , and where the neighboring quanta at Planck distances are held together by the Planck force $F_P = c^4/G$.

It can be shown that such a bosonic ether, where the $\pm m_P/\pm m_S$ -quanta, with alternative signs and spins at the cubic and face-centered positions of the ether, is not only consistent with the well known relativistic and quantum-mechanical properties of gross matter, rather it will turn out that the relativistic ether is the essential basis to generate these properties of gross particles. And, as shown in the following, the developed understanding of an 8-dimensional (i.e. 8- D_{U2}) subtle parallel Universe $U2$, being superimposed onto the subset of our visible 4- D_{U1} -Universe $U1$, can be used to explain major anomalies in modern physics as outlined below.

1. Spacetime Is a Geometrically Structured Field of Subtle Matter: The introduced universal subtle ether allows a quantitative explanation of the reversible bending of spacetime as described in GT under the influence of gross masses, as searched for by Einstein, allows the explanation of the propagation of gravitational waves and replaces the currently assumed “universal vacuum”. Thus all “physical fields” emerge from the universal ether as different physical aspects of the

universal ethereal field of subtle matter, and the ether is regarded as being the carrier of all forms of gross matter and of all "virtual forces" between gross particles.

2. Explanation of the "Vacuum Catastrophe": The "vacuum energy" is regarded in present-day physics as an underlying background energy that exists in space throughout the entire Universe. The exact nature of the particles (or fields) that generate vacuum energy with a density as great as that required by inflation theory remains a mystery.

Using the upper limit of the cosmological constant, the vacuum energy of free space at the gross level has been estimated to be $\sim 10^{-9} \text{ J/m}^3$. However, both quantum electrodynamics and stochastic electrodynamics requires it to have a tremendously larger value of about 10^{113} J/m^3 . This huge discrepancy between $\sim 10^{-9} \text{ J/m}^3$ and $\sim 10^{113} \text{ J/m}^3$ i.e. the ratio $10^{113}/10^{-9} = 10^{122} \gg 1$, is known as the "vacuum catastrophe". This anomaly has been described as "the worst theoretical prediction in the history of physics" (see Wikipedia for "Cosmological constant problem").

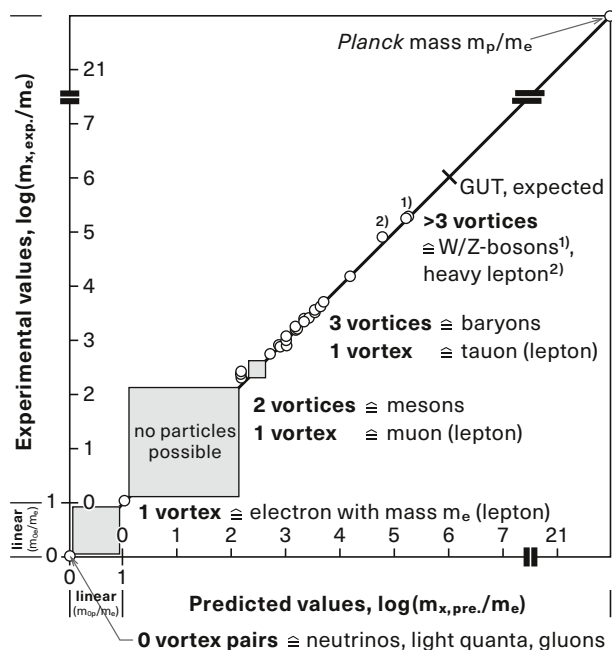
In the extended physics proposed here, the "vacuum" is replaced by the "relativistic ether", as mentioned. Based on the face-centered cubic elementary cell with Planck length, and on the absolute masses of the involved subtle $\pm m_p/\pm m_s$ -quanta, a subtle density of the ether of 10^{113} J/m^3 results.

This result is in excellent agreement with the above value of about 10^{113} J/m^3 , predicted, but unexplained in modern physics. Thus, while the above density of

10^{-9} J/m^3 is given at the gross 4- D_{U1} -level of U1, the value of 10^{113} J/m^3 exists at the subtle 8- D_{U2} -level of the parallel Universe U2 where inflation takes place, and which generates the basis of the visible Universe U1. Thus, it is a necessity that two different energy densities exist, one at the gross U1-level with $\sim 10^{-9} \text{ J/m}^3$, and another one at the subtle U2-level with $\sim 10^{113} \text{ J/m}^3$. This result gives credit, on the one hand, to the concept that a parallel Universe U2 exists superimposed onto, and pervading, the visible Universe U1, and supports, on the other hand, the existence of a subtle, relativistic 8- D_{U2} -ether as the basis of a universal 4- D_{U1} -spacetime that penetrates and underlies the visible Universe U1.

3. Prediction of the Rest Masses of Elementary Particles: Achieving “gross fermionic particles” as individual entities within the ether’s universal bosonic structure requires local disturbances of a fermionic nature, such as localized rotational anomalies, due to spin switching within the ether to a local spin state $\frac{1}{2}$ (yielding neutrinos with very low or no rest mass) or due to the formation of “ $(+m_s/-m_s)$ -vortices” from neighboring $\pm m_s$ -quanta in the ether lattice which rotate around each other, again exhibiting a spin state of $\frac{1}{2}$. In the thus developed 8-dimensional subtle/ 4-dimensional gross-model of elementary particles, embedded in the universal ether, such $\pm m_s$ -vortices are regarded as subtle core-structures of gross particles with rest mass $m > 0$. This model allows a quantitative prediction of the rest mass of gross elementary particles from their respective geometrical subtle core structures (see Fig.58).

Fig. 58: Comparison of the experimentally detected rest masses of gross elementary "4- D_{U1} -particles" and predicted values, deduced from their subtle 8- D_{U2} -core-structures, relative to the electron's rest mass m_e . In the case of a perfect fit all values should lie on the 45° intersection. In the areas where no subtle 8- D_{U2} -core structures can be geometrically constructed, no gross 4- D_{U1} -particles exist (see the shaded squares). Together with the excellent fit of the data, this gives credit to the developed 8-dimensional subtle/4-dimensional gross-model of elementary particles, where the gross particles express only the gross "iceberg-tips" (i.e. the gross 4- D_{U1} -components) of the total entity of an 8-dimensional androgynous 8- D_{U2} -subtle/4- D_{U1} -gross particle.



4. Common Deduction of ST and QM, Explanation of QM as well as of the Quantum Paradoxes: The presented androgynous (8-dimensional subtle/4-dimensional gross)-model of elementary particles embedded in the universal ether allows a common quantitative deduction of the quantum mechanical properties of gross elementary particles as well as their relativistic behavior, thus revealing that the introduced ether is a “relativistic ether”, as postulated by Einstein.

Furthermore, it follows from the deduced particle model that quantum mechanical chemical orbitals and eigenstates are real standing waves of subtle matter, and that all of quantum mechanics, in general, results from the subtle 8-dimensional field-components of the gross 4-dimensional particle components.

In addition, this particle model allows a physical explanation of the previously unexplained, yet predicted and measured, quantum paradoxes such as, for example, the explanation of the wave/particle duality (i.e. the 8- D_{U2} -field-/4- D_{U1} -particle-components), of the results of double slit experiments or of the entanglement in EPR-entanglements, which-way experiments, etc. This concept is, in addition, consistent with David Bohm’s formulation of the “quantum mechanics of hidden (i.e. subtle) variables” based on the idea of an “implicate” (i.e. subtle) order in $U2$, yielding an excited “explicate” (i.e. gross) order in $U1$.

5. Explanation of Quarks and the Broken Charges of Quarks: This 8-dimensional subtle/4-dimensional gross-model of elementary particles allows a quantita-

tive explanation of the broken electric charges $+\frac{2}{3}$, and $-\frac{1}{3}$ of up/charm/top- and down/strange/bottom-quarks.

Titled "Quarks are still elusive", CERN published in the CERN Courier (52, (3), April 2012, p.16) that with latest accelerator technology, according to the standard model of elementary particles, down to a scattering cross section of 10^{-39} cm^2 , no particles with electric $(\frac{1}{3})$ - or $(\frac{2}{3})$ -charges could be detected, leading to the statement: "It can be concluded that the likelihood to observe quarks with the existing accelerators is very low". Detailed research in the subtle background structures of gross elementary particles reveals that the present-day postulated quarks are identical to $\pm m_s$ -vortices of pairs of subtle $\pm m_s$ -quanta that spin around each other. Also the electron itself results from a single field-quantum $\pm m_s$ -vortex, thus expressing a "quark". The broken electric charges of present-day assumed quarks result quantitatively from the geometrical structures of the subtle matter background components of leptons or baryons and a primordial electric charge of $e/2$. This primordial electric charge is, however, bound to the subtle m_s -vortex-quanta of gross particles and cannot be detected in accelerators like CERN. Similarly, the spins $(\frac{1}{2}) \cdot h/(2 \cdot \pi)$ of the gross elementary particles, like leptons or baryons, result from primordial spins $(\frac{1}{4}) \cdot h/(2 \cdot \pi)$ that are also associated to the m_s -vortex-quanta.

6. Prediction of the Values of Natural Constants:

The 8-dimensional subtle/4-dimensional gross-model of elementary particles allows a quantitative prediction of the values of the following natural constants:

Table 3: Predicted Values of Natural Constants

A: Sommerfeld's fine structure constant α

$$\alpha = 2 \cdot \pi \cdot e^2 / (4 \cdot \pi \cdot \epsilon_0 \cdot h \cdot c) = (32 / (8 \cdot \pi \cdot 0.024322 \cdot 15 \cdot 16^4))^{0.5} \\ = 1/137.035 \dots$$

B: Electric charge

$$e = \pm [h \cdot c \cdot \alpha \cdot (4 \cdot \pi \cdot \epsilon_0) / (2 \cdot \pi)]^{0.5} = 1.60219 \cdot 10^{-19} \text{ C}$$

C: Bohr magneton

$$\mu_B = (1/2) \cdot e \cdot h / (2 \cdot \pi \cdot m_e) = 9.2742 \cdot 10^{-24} \text{ J} \cdot \text{m}^2 / (\text{V} \cdot \text{s})$$

7. Explanation of “Electrosmog”: The 8-dimensional subtle/4-dimensional gross-model of elementary particles allows a quantitative explanation of electrosmog and its physical effects. Due to this model, quantized gross eigenstates in the visible Universe U1 are directly correlated with superimposed subtle eigenstates with identical energies in 8-D_{U2}-fields as subsystems of the 12-D_{U2}-spacetime.

This implies, for example, that in the deexcitation of an electronic 4-D_{U1}-eigenstate, not only does an energetic change of the gross point-like component take place, accompanied by the emission of an electromagnetic $h \cdot \nu$ -quantum, but also a similar energetic change of the subtle matter 8-D_{U2}-component takes place which generates the excited orbital where the electron's gross component was embedded. This implies the emission of a subtle, non-electromagnetic form of radiation, $h_s \cdot \nu_s$, in addition to the electromagnetic one.

Because of physical side conditions, this subtle emission has a positive sign, and implies health-destroying (entropic) properties if this form of radiation is, for example, absorbed by a living system. This kind of so-far scientifically unknown form of radiation, i.e. $+h_s \cdot v_s$, is the cause of so-called "electrosmog" in connection with all de-excitation processes in electric systems as well as at the nuclear level. Especially dramatic effects of electrosmog exist, for example, in the neighborhood of nuclear power plants (NPP) or of final disposal sites of nuclear wastes. In two independent studies conducted by the German "Federal Office for Radiation Protection" in 2007 and 2008, it was found that within an area of about 5km around NPPs the likelihood of children falling sick with leukemia is increased by 100 %.

Reasons for this effect are today scientifically unknown, because all radioactive forms of α -, β -, or γ -radiation are completely blocked inside modern NPPs, and elevated values cannot be detected in their neighborhood. However, in the process of de-excitation of the radioactive fuel in NPPs, not only is useful heat generated by the decomposition of fissionable material, but also non-electromagnetic subtle matter radiation with a positive sign, i.e. "electrosmog", is released in high intensity.

This radiation is passing through the gross shielding materials for the electromagnetic forms of radiation without resistance. It is absorbed where new phase boundaries are generated at high rates. That is because,

at newly generated phase boundaries, subtle matter is absorbed especially well. This is the case in the cellular growth process of young children, and therefore leads to their increased morbidity, while in adults with lower cell production obviously the immune system can handle the situation.

8. Experimental Tests reveal that increased intensities of fields of subtle matter allow:

A: the generation of free energy from subtle matter at a technical scale,

B: the study of transmutations of chemical elements in LENR-processes either to isotopes or to other elements at room temperature and at normal pressure, and

C: an approach to study anti-gravitational effects at the laboratory or technical scale.

5.6