STAGES OF QUANTOMOBILE DEVELOPMENT

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Abstract

Physics advances of recent decades outlined the beginning of the formation of a new technological paradigm based on anti-gravity principles of object movement and propulsive drive. The article provides an engineering (simplified) view on the main conceptual features of the theory of Superunification that help to overcome the forces of gravity and inertia. It also considers schemes and propulsive mechanisms of thrust formation in quantum engines.

A concept of a quantomobile is introduced. A strategy of sequential R&D activities to design a quantomobile is developed. Removing wheels for quantomobile movement modes leads to a concept of a flying car.

Keywords

Automobile, quantum engine, quantomobile, flying car, R&D activities, development stages.

Introduction

Efforts of scientists in search of a new paradigm of energy supply for humanity in the 20th century (Einstein (1963), Davies (1985), Tesla (2009), Parker (1991), Veinik (1991), Puthoff (2010), Nikitin (2016) and others) were crowned with unveiling of the Unified Field, the structure and energy density of the physical vacuum, super-strong electromagnetic interaction (SEI).

An insight into the above-mentioned entities, their identification, content, systemic interconnection of functions and other features are with high confidence provided by the theory of Superunification suggested by Russian scientist Leonov V. S. at the turn of the 20th and 21st centuries (Leonov, 1996, 1997, 2010a, 2013, 2016, 2017a, 2017b, 2017c, 2018). This theory supported by a number of patents granted to Leonov on corresponding objects (Leonov, 2002) and results of experiments involving those objects (Leonov, 2009, 2010b, 2018, Petrov, 2015) provides the key to mastering the ability to draw energy from the global physical vacuum.

The number of studies in this field performed by other authors and research teams (Shawyer, 2006), McCulloch (2014), Fetta (2014), Tajmar (2018) and others) is also growing.

Practical implementation of the above-mentioned ability will result in a new technological paradigm involving the transport sector as well. And then, quantum engines will replace internal combustion and jet engines, new propulsion devices and transport routes will appear, the existing propulsion devices, transport routes and transport infrastructure in general will improve. The transport industry should begin relevant preparations.

An author's publication (Kotikov, 2018), firstly, addresses initial assumptions of the theory of Superunification suggested by Leonov V. S., secondly, covers concepts of quantum engine development, and, thirdly, anticipates features of cars with quantum engines (quantomobiles). The author is aware that the research is hypothetical due to weak verification of the physical theory involved. However, the readiness of the transport industry to accept new physical realities both in terms of time and the accumulated technology potential shall be noted.

The three-pronged goal of the article is to broaden understanding in this promising field: firstly, to provide an engineering (simplified) view on the main conceptual features of the theory of Superunification that help to overcome the forces of gravity and inertia; secondly, to present the concepts of thrust formation in quantum

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engines; and, thirdly, to present a strategy of sequential R&D activities to develop prototypes and produce batches of quantomobiles.

The main goal of the first subgoal is the formation of a compact conceptual essay based on dozens of publications (including more than 700 pages of the main publication only (Leonov, 2010a)) to get an insight into the mechanisms of thrust formation in quantum engines at the engineering level, i.e. to ensure the subsequent solution of tasks at the level of the second subgoal.

Successful solution of the tasks within the third subgoal will depend on the level of understanding and mastering the foundations of the theory of Superunification, i.e. comprehension of the first two subgoals. Therefore, in the author's opinion, the interpretation of the foundations of this new and difficult physical theory at the engineering level will be quite appropriate. It is possible to consider this simplified representation as an initial part of the future Quantomobile Theory.

It should be noted that the concept of the Quantomobile class (as the heir to the Automobile superclass) with a quantum engine/propulsor using energy of the quantized physical vacuum is justified.

Within this framework, the author of this article argues that it is inappropriate to use the Quantomobile term for an electric car with flow (liquid) batteries produced by NanoFlowcell company (https://www.drive2.ru/b/2849445/) or the Quantomobile.ru domain name (https://www.runfo.ru/quantomobile.ru).

An engineering (simplified) view on Superunification theory concepts ensuring overcoming forces of gravity and inertia

A quantum model of gravity in the theory of Superunification

The theory of Superunification (Leonov, 2010a) considers the process of Einstein's space-time quantization. Quantization is an energy process related to filling space with quantons. A quanton includes four whole quarks: two electric (+1e and -1e) and two magnetic (+1g and -1g) quarks forming a tetrahedron with two orthogonal dipoles — electric and magnetic. Those two dipoles form an electromagnetic quanton quadrupole. The four mentioned quarks making up a quanton combine electricity and magnetism in the form of a unified electromagnetic substance, the carrier of which is the four-dimensional quantized space-time (QST).

The global physical vacuum (including material insertions) is densely filled with multiple mobile quantons representing a "boiling bouillon" Quantons interact continuously due to their proximity, charge sign in adjacent quarks of neighboring quantons and orientation of dipole axes (see diagrams and figures in the corresponding works (Leonov, 2010a, 2013; Shkrudnev, 2017; Kotikov, 2018).

The QST in the equilibrium state is an electromagnetic static field which is a carrier of super-strong electromagnetic interaction (SEI) — the fifth fundamental force. SEI is that Unified Field combining gravity and electromagnetism, anticipated by Einstein in his general theory of relativity (GTR) (however, he failed to combine those at the time). As a carrier of SEI, the QST possesses great energy density of approximately 10^{73} J/m^3 (Leonov, 2013).

The equilibrium state of a QST fragment implies that the resultant vectors of axial forces of quark dipoles are equal to zero in any direction (zero vectors). Throwing a material object (containing a lot of free quarks) into the fragment perturbs the electromagnetic field, bending it relative to the initial equilibrium state (in this case the resultant force zero vector acquires magnitude and direction). Control of free quarks' introduction allows affecting changes in the vector (Leonov, 2010a).

The discovery of the quanton in the form of a four-dimensional particle of a space-time quantum made it possible to give the GTR a quantum character. It also allowed V. S. Leonov to develop a quantum theory of gravity proceeding from the Einstein's concept of curved four-dimensional QST as the basis of gravity (Leonov, 2010a).

Leonov experimentally ascertained a ponderomotive (force) interaction between electromagnetism and gravity. Anti-gravity effects were discovered. According to the results of experimental studies, external fields can interact with the QST structure, resulting in stable anti-gravity effects. We can consider the outer space as an elastic super energy-dense medium having an electromagnetic structure with overall support and sufficient energy. We should learn how to interact with the medium and manage this interaction (Leonov, 1997).

The theory of Superunification also states that weightless QST penetrates all weighable (material) bodies. In this case, all weighable bodies represent an integral part of weightless QST. The body mass is formed as a result of the spherical deformation (bending according to Einstein) of weightless QST by elementary particles making up the body. In this case, the body mass represents an integral part of the elastic quantized medium, its energy cluster (Leonov, 2010a).

Spherical deformation of QST according to Einstein is curvature of its "density", which can be represented by Lobachevsky spheres of various curvature, strung one

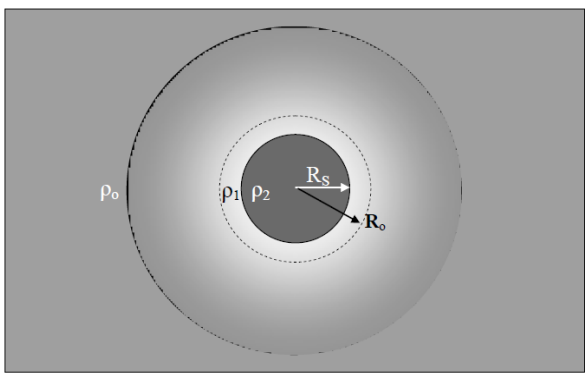

Figure 1. Modeling an elementary particle in the form of areas of spherically deformed QST: R_S — gravitational medium interface; ρ_1 — tension field (light-colored), ρ_2 — compression field (dark-colored) (Leonov, 2010a)

upon another at unequal distances (see Figure 1) (Leonov, 2010a).

If we throw an electric charge into QST, quantons will be attracted to this electric charge, compressing QST close to the charge and extending QST at a distance from the charge. A gravitational boundary forms between the compression and tension fields. A process of spherical deformation of the quantized medium occurs (Leonov, 2010a).

Leonov denoted the maximum gravitational potential of the unperturbed QST as C_o^2, and the gravitational action potential of the perturbed QST —as C^2.

QST can be characterized as a scalar field with the distribution of the medium quantum density $\rho\ (x, y, z)$. Thus, the process of medium compression/tension from the perspective of vector analysis (in Heaviside's notation (Heaviside, 1893)) can be represented by the divergence of the gradient of the QST quantum density (Leonov, 2010a):

$$\mathrm{div}\left(\mathrm{grad}\rho\right) = \mathrm{k_o}\rho_\mathrm{m} \quad (1)$$

where k_o — proportionality coefficient;
ρ_m — matter density, kg/m^3.

The gradρ gradient which is a part of (1) represents the medium deformation vector $\boldsymbol{D}$ when the scalar field $\rho\ (x, y, z)$ is used to create a vector field upon deformation, characterizing gravity emergence (Leonov, 2010a).

Gravity and inertia

The following distribution of the Newtonian gravitational potential φ_n is known to be characteristic of a spherically symmetric system:

$$\varphi_n = -\frac{Gm_1}{r} \quad (2)$$

The theory of Superunification shows that the Newtonian potential φ_n is fictitious, and the action potential $C^2 = C_0^2 - \varphi_n\ \gamma_n$ is present in QST (where γ_n is the so-called normalized relativistic factor that changes its value depending on approximation to the speed of light). The gravitational force in the theory of Superunification is expressed through the action potential C^2 at $\gamma_n = 1$ in the following way (Leonov, 2010a):

$$\mathbf{F_m} = m_2 grad(C_0^2 - \varphi_n) = G\frac{m_2 m_1}{r^2}\mathbf{1_r} \quad (3)$$

where $\mathbf{1_r}$ is the unit vector along the radius (specifying the direction for the force $\boldsymbol{F_m}$).

Leonov expresses the force of gravitation (3) through the deformation vector $\boldsymbol{D}$ of QST:

$$\mathbf{F_m} = \frac{C_0^2}{\rho_0} m_2 grad\,\rho = \frac{C_0^2}{\rho_0} m_2 \mathbf{D} \quad (4)$$

The deformation vector $\boldsymbol{D}$ in (4) is an analogue of the gravitational field strength vector $\boldsymbol{a}$ (where $\boldsymbol{a}$ is free-fall acceleration):

$$\mathbf{a} = \frac{C_0^2}{p_0}\mathbf{D} \quad (5)$$

Figure 2 shows the trial mass m_2 in the heterogeneous gradient field of the Earth. The quantum density ρ (action potential C^2) weakens at the surface of the Earth. However, they do not determine the gravitational force. It is determined by their gradient (4), i.e. deformation $\boldsymbol{D}$ of QST. According to the theory of Superunification, gravity cannot emerge outside QST, and it is based on the real deformation of QST.

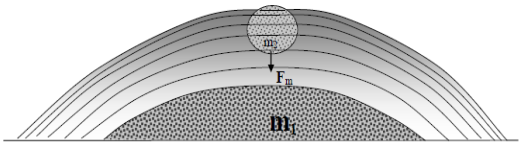

Figure 2. Gravity force $\boldsymbol{F_m}$ affecting the mass m_2 in the field of the perturbing mass m_1 (Leonov, 2010a)

A gravitational pit forms around any object having a perturbing mass. Figure 3 shows that formally the trial mass m_2 affected by the gravity force $\boldsymbol{F_m}$ rolls down into the gravitational pit to the perturbing mass m_1, ensuring their mutual gravitational attraction.

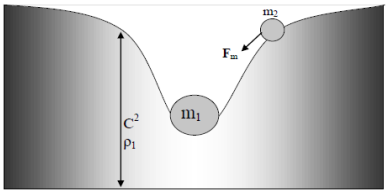

Figure 3. Presence of a gravitational pit in QST around the perturbing mass m_1 illustrating the effect of the gravity force $\boldsymbol{F_m}$ on the trial mass m_2 (Leonov, 2010a)

For clarity, Leonov transfers the trial mass m_2 out of the gravity field of the perturbing mass m_1 (Figure 2) to a separate figure (Figure 4) leaving the heterogeneity of the gravity field inside the gravitational boundary of the trial mass unchanged. The deformation vector $\boldsymbol{D}$ is provided with indices i (inertia) and 2 (deformation of the field inside the trial mass m_2) — $\boldsymbol{D^i_2}$. In this case, the trial mass will be affected by the accelerating inertia force $\boldsymbol{F_i}$, irrespective of the fact that the surrounding QST is not deformed.

The quantum density of the medium inside the trial mass m_2 (Figure 4) increases from ρ_2^{i1} to ρ_2^{i2}, forming the gradient of the medium quantum density within the body, which determines the direction and magnitude of the deformation vector $\boldsymbol{D^i_2}$ and the effect of the accelerating force $\boldsymbol{F_i}$ (Leonov, 2010a):

$$\mathbf{D_2^i} = grad(\rho_2^i) \quad (6)$$

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$$\mathbf{F_m} = m_2\mathbf{a} = m_2\frac{C_0^2}{\rho_0}\mathbf{D_2^i} \quad (7)$$

$$\mathbf{a} = \frac{C_0^2}{\rho_0}\mathbf{D_2^i} \quad (8)$$

The equivalence of gravity and inertia is determined by the capability of QST to be deformed, in the presence of which an unbalanced gravity or inertia force emerges. The difference between gravity and inertia lies in the fact that the deformation of the field inside the trial mass under the effect of gravity is due to the external perturbing field, and in case of inertia — due to the effect of the perturbing force (Leonov, 2010a).

Concepts of thrust formation in quantum engines

With an insight into the quantum nature of gravity in the theory of Superunification, the technology of creating an artificial gravity force has gotten real. It has already been implemented by Leonov V. S. in a number of designs of quantum engines that generate a thrust impulse due to the interaction of operating elements of quantum engines with quantized space-time without the ejection of the reactive mass (Leonov, 2009, 2010b, 2016, 2017d, 2018).

The gravitational field of the Earth creates the gravity force $\boldsymbol{F_m}$ for the trial mass m_2 (Figure 2). A body having the mass m_1 inside QST forms a gravitational pit into which the trial mass m_2 is "rolling down" (Figure 3). This is only the outer side of gravity, nature of which lies in the fact that the gravitational field of the Earth represented by a gravitational pit in this area is gradient (curved, deformed), and its strength decreases in process of advancement to a surface of the perturbing mass.

This corresponds to the main provisions of the field theory, when the direction and magnitude of the force vector ***F*** (the latter being determined by the spatial gradient (grad) of energy *W*) (in Heaviside's notation (Heaviside, 1893)), are oriented towards a decrease in energy (Leonov, 2018):

$$\mathbf{F} = gradW \quad (9)$$

Equation (9) is the main equation in the theory of Superunification to calculate the force. Other equations for the calculation of forces, including gravity forces, are derived from this equation. Differentials in energy levels in space determined by the energy gradient (9) lead to the emergence of a force, to force interaction.

If the global energy field *W* is a scalar field, then the gradient (9) describes a vector force field having the direction and magnitude of the fastest change in energy *W* in partial derivatives and can be written with the use of the Hamiltonian operator (Leonov, 2018):

$$gradW = \nabla W = \frac{\partial W}{\partial x}\mathbf{i} + \frac{\partial W}{\partial y}\mathbf{j} + \frac{\partial W}{\partial z}\mathbf{k} \quad (10)$$

where ***i, j, k*** are unit vectors along the *x, y, z* axes, respectively.

Equation (10) of the classical field theory (Heaviside, 1893) is valid only in case when energy diffuses in space in the form of an energy field. The absence of energy level differentials in a homogeneous energy field can be described by the following condition:

$$W = const \quad (11)$$

In accordance with the condition (11), the energy level remains constant regardless of the coordinates *x, y, z* in space. As it is known, the derivative of a constant is equal to zero:

$$gradW = \frac{\partial(W = const)}{\partial x}\mathbf{i} + \frac{\partial(W = const)}{\partial y}\mathbf{j} + \frac{\partial(W = const)}{\partial z}\mathbf{k} = 0 \quad (12)$$

If we need forces to emerge, it is necessary to create energy level differentials in the energy field, when W ≠ const. As far as the gradient (10) is a vector function, its force modulus is determined by the following equation:

$$\left|gradW^2\right| = \sqrt{\left(\frac{\partial W}{\partial x}\right)^2 + \left(\frac{\partial W}{\partial y}\right)^2 + \left(\frac{\partial W}{\partial z}\right)^2} \quad (13)$$

The direction of the unit gradient vector (force direction) ***n*** is determined by the ratio of the function (10) to its modulus (13):

$$\mathbf{n} = \frac{gradW}{\left|gradW^2\right|} = \frac{\frac{\partial W}{\partial x}\mathbf{i} + \frac{\partial W}{\partial y}\mathbf{j} + \frac{\partial W}{\partial z}\mathbf{k}}{\sqrt{\left(\frac{\partial W}{\partial x}\right)^2 + \left(\frac{\partial W}{\partial y}\right)^2 + \left(\frac{\partial W}{\partial z}\right)^2}} \quad (14)$$

Equations (9)...(14) represented by Leonov in Heaviside's notation (Heaviside, 1893) are valid for calculations of the force when the function of energy distribution in space *W = f (x, y, z)* is known, i.e. energy diffuses in space unevenly and energy differentials are observed.

The vector ***n*** (14) of the Earth's gravitational force is directed towards the center of the Earth (Figure 2). The theory of Superunification provides the scientific basis for the creation of an artificial thrust (changing the direction of the force vector ***n***), regardless of the effect of external gravity.

Then, using equation (9), Leonov formulates the Earth's gravitational force $\boldsymbol{F_n}$ through the energy gradient for the trial mass m situated in the gravity field with the gravitational action potential C^2 (Leonov, 2018):

$$\mathbf{F_n} = gradW = grad(mC^2) \quad (15)$$

Equation (15) reflects the fact that the Earth's gravity field leads to the gradient redistribution of energy within the trial mass m and creation of a force in accordance with the Newton's law of gravitation. The deformed QST (according to Einstein) with the gradient gravitational action potential C^2 serves as a mediator in the creation of the gravitational force.

To create an artificial thrust $\boldsymbol{F_T}$ in the absence of external gravitational perturbation, it is necessary to

artificially create an energy gradient within the trial mass m (Figure 5).

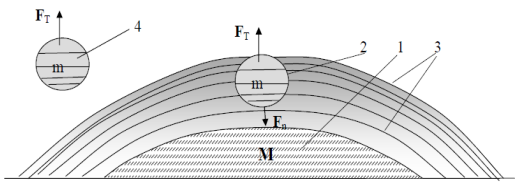

Figure 5. Creation of an artificial thrust F_T due to the creation of an energy gradient within the trial mass *m* (4) (Leonov, 2018)

The trial mass (body) m (2) in Figure 5 is turned around by 180° vertically, with initial gradient distribution of energy, gravitational potentials and medium quantum density inside the body. Then the trial mass (4) is removed from the picture to understand the formation of the basis for the development of a quantum engine with the thrust F_T, where the direction ***n*** (14) of its vector can be changed in any way, including opposite to the Earth's gravitational force.

Thus, in order to create an artificial thrust, it is necessary to create an energy gradient inside the body (operating unit) due to the redistribution of the medium quantum density (Leonov, 2018). In 2002, in his patent, Leonov created an energy gradient (Leonov, 2002) due to the use of the conic shape of the operating unit and the effect of an external electromagnetic field with crossing electric and magnetic fields on the conical operating unit.

So far, he has implemented a dozen of methods to create an artificial thrust in various designs of quantum engines: with rotating operating units (conical, disk, linear, magnetic and non-magnetic, etc.), as well as with non-rotating operating units (conical, linear, with the supply of electromagnetic energy in a wide frequency range, SHF energy, thermal energy, with matter gradient density, etc.) (Leonov, 2018).

The justification for the operation of the EmDrive engine designed by R. Shawyer (Shawyer, 2006) can serve as an example of Superunification theory application to the analysis of the structural design of the quantum engine. The principle of engine operation (Figure 6) is associated with the creation of an energy gradient (9) in a conical operating unit, which determines the direction of thrust towards the area of decrease in energy concentration.

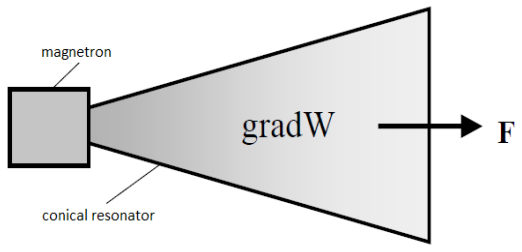

Figure 6. EmDrive microwave quantum engine with a conical resonator (Leonov, 2018)

The thrust ***F*** is created due to the interaction of the gradient SHF field with QST. At the same time, the gradient SHF field creates a gradient of the medium quantum density and energy inside the conical resonator (Leonov, 2018).

Both the magnetron, and conical resonator represent an integral part of QST freely penetrating those. Under the influence of the gradient field, the effect of the "drawing-in" of QST quantons in the diffuser of the conical resonator is observed. Since QST is stationary, the "drawing-in" effect manifests as the movement of the quantum engine in space under the influence of the thrust ***F*** (Figure 6). It turns out that the quantum engine, creating the thrust ***F***, kind of moves in QST (in the front), pushing off this space as from an elastic quantized medium (in the back).

The thrust direction in Figure 6 is conventional. It can vary and even become reverse, depending on the design of the resonator, placement of channels leading from the magnetron to the resonator, characteristics of the SHF field (McCulloch, 2014; White, 2017). This is calculated analytically with the use of equations (9)...(15).

Despite the fact that the theoretical concepts considered in the article still require comprehensive technical approbation and verification from the scientific community, a growing number of patents and operating laboratory prototypes of anti-gravity devices with quantum thrust already give confidence in the appearance of cars with quantum engines – quantomobiles — in the foreseeable future. This determines the need for the automotive industry to consider the following reciprocal actions: to carry out computational and experimental research of thrust in quantum engines, areas of quantum engines' installation in/on the vehicle body, forecasting of quantum engines' multi-functionality and their management.

Let us to attempt to plan R&D activities for the early stages of the creation of quantomobiles: studying the formation and application of the quantum engine thrust, installation of one or several quantum engines.

Stages of conducting R&D activities for the creation of prototype models and batches of quantum cars

Table 1 shows the main layout and time characteristics of those stages.

Table 1. Main layout and time characteristics of stages of conducting R&D activities

Stage	Number of quantum engines in a quanto-mobile	Installation options	Estimated date of the beginning of experimental works
1	1	1–9	First decade
2	2	10–15	Second decade
3	3	16–27	Third decade
4	4	28–35	Fourth decade
5	N	On a random basis	Fifth decade +

Stage 1 — testing the first prototype thrust quantum engines and diagrams of installation of those quantum engines on automobile chassis of the existing car designs.

Stage 2 — elaborating suspension configuration of a quantomobile with two thrust quantum engines.

Stage 3 — elaborating suspension configuration of a quantomobile with three quantum engines (thrust quantum engines with horizontal vector control).

Stage 4 — elaborating suspension configuration of a quantomobile with four quantum engines (thrust quantum engines with horizontal and vertical vector control).

Stage 5 — elaborating concepts of quantomobiles based on quantum engines of various functionality.

Available space will be surely needed to move and install quantum engines, test various installation diagrams, place laboratory equipment and personnel. Therefore, it is reasonable to use mobile laboratories mounted in a truck (especially at the initial stages).

Figure 7. KamAZ-4911 Extreme vehicle

To represent the conceptual aspects of advancement through the stages, we have chosen the following basic vehicle: KamAZ-4911 Extreme, the one designed for the Dakar rally (see Figure 7). Moreover, the Kama Automobile Plant, with its powerful production and R&D facilities, advanced technologies, inquisitive minds and ambitious aspirations of its team of engineers, can certainly become one of the first manufacturers of future mass-scale quantomobiles.

Stage 1 — testing the first prototype thrust quantum engines and diagrams of installation of those quantum engines on car chassis of the existing automobile designs.

This initial stage will involve the first attempts to design and manufacture prototype quantum engines for cars; attention will be paid to the solution of layout issues, search for optimum main circuits of general-purpose quantomobiles, calculation of overall thrust dynamics, consideration of the vehicle oscillatory system, key issues of ensuring the vehicle steerability and movement safety, as well as the safety of personnel.

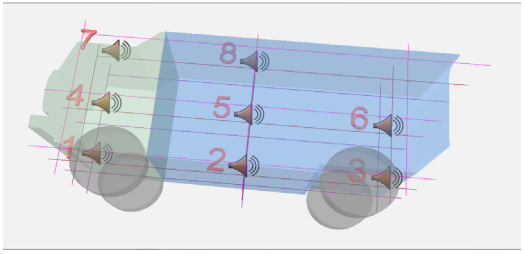

Figure 8. A matrix of the experimental layout for areas of the installation of a single quantum engine

Of course, we should start from one quantum engine per car and only with horizontal thrust. The installation of a single quantum engine shall be tested and studied analytically and experimentally at three horizontal levels: in the plane of the wheel axes, in the plane of the floating center of gravity, at the highest point of quantum engine mounting. I

t is also reasonable to test and study the installation of quantum engines in three vertical sections: in the plane (and/or in the front) of the front axis, in the plane with the floating center of gravity, in the plane (and/or in the back) of the rear axis.

Those are presented in Figure 8 in the form of a conventional matrix of analytical and experimental works. Obviously, a single quantum engine should be installed in the central longitudinal-vertical plane. Point 9 is absent as there is no sense to install an engine in that place due to the occurrence of the overturning moment (although it may make sense for a road train).

Stage 2 — elaborating suspension configuration of a quantomobile with two thrust quantum engines.

At this stage, further attempts will be made to design and manufacture prototype quantum engines for cars; attention will be paid to the solution of layout issues, search for optimum main circuits of quantomobiles, calculation of thrust dynamics, consideration of the vehicle vibration system, key issues of ensuring the vehicle steerability and safety issues.

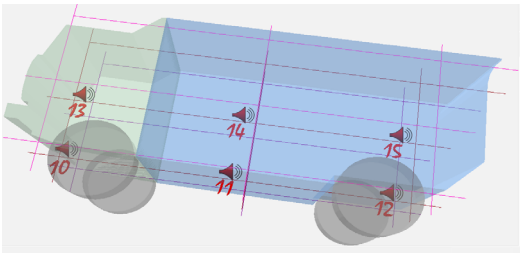

Figure 9. A matrix of the experimental layout for areas of the installation of two quantum engines

As two co-axially installed quantum engines (in comparison with a single quantum engine) improve the longitudinal stability and flexibility of load distribution along the vehicle axes, and provide the possibility of lateral yawing motion of the thrust vector, such issues are added to the aspects of the first stage. A concept of a quantum engine with horizontal vector control is introduced.

The installation of engines shall be tested and studied analytically and experimentally at two horizontal levels: in the plane of the wheel axes, in the plane of the floating center of gravity.

It is reasonable to test and study the installation of quantum engines in three vertical sections: in the plane (and/or in the front) of the front axis, in the plane with the floating center of gravity, in the plane (and/or in the back) of the rear axis.

The Figure 9 shows a matrix of experimental installation areas for quantum engines. Various options (at least 12) can be chosen. Obviously, both quantum engines should be installed in the central longitudinal-vertical plane.

At stage 2, When the soundness of the quantomobile will be fundamentally proved, based on the results of works at stage 1, it is necessary to start early R&D activities in the construction of quantum engines and quantomobiles, and their engineering support.

Stage 3 — elaborating suspension configuration of a quantomobile with three quantum engines (thrust quantum engines with horizontal vector control).

At this stage, R&D activities are continued, with the detailed elaboration of the issues generated at stages 1 and 2. More detailed studies of the longitudinal stability are performed. Studies of the lateral stability start. One of three quantum engines is allocated for controlling the trajectory movement.

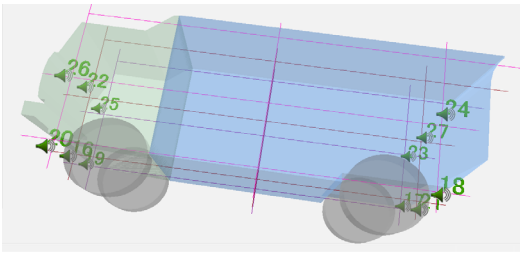

Figure 10. A matrix of the experimental layout for areas of the installation of three quantum engines

The experimental installation layout for three quantum engines consists of four triangles (see Figure 10): 16-17-18; 21-19-20; 22-23-24; 27-25-26. In each of those four junctions, the location of the acute angle of the triangle (located on the longitudinal axis of a car) is foremost in relation to two side locations.

Possibilities of horizontal vector control by means of quantum engines mounted on the longitudinal axis of a car are studied. It is possible to study the partial suspension of a car by horizontal thrust vectors of lateral quantum engines.

Stage 3 requires to continue R&D activities concerning the construction of quantum engines and quantomobiles, and their engineering support.

According to the results of stages 1–3, it is also advisable to prepare monographs, study guides, special training courses for engineers and teachers in this new field.

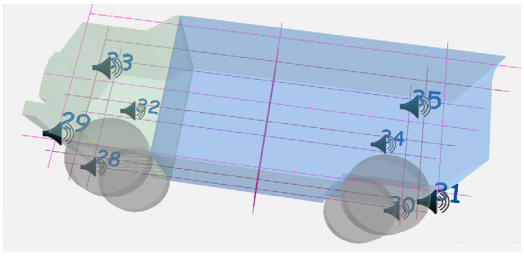

Figure 11. A matrix of the experimental layout for areas of the installation of four quantum engines

Stage 4 — elaborating suspension configuration of a quantomobile with four quantum engines (thrust quantum engines with horizontal and vertical vector control).

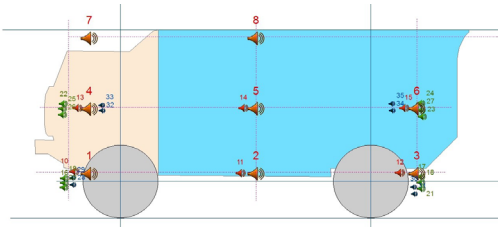

Figure 12. An overall picture of the layout for quantum engine locations for all four stages of R&D activities (lateral view)

Objectives of R&D activities at this stage are as follows: the use of the knowledge accumulated at the previous three stages for the creation of a quantomobile with partial or even complete replacement of the wheel assembly, with the implementation of longitudinal thrust, trajectory and lateral control, as well as the possibility of hovering. Refinement of the quantum engine system (thrust engines with horizontal and vertical vector control) is also provided.

A matrix of the experimental layout is shown in Figure

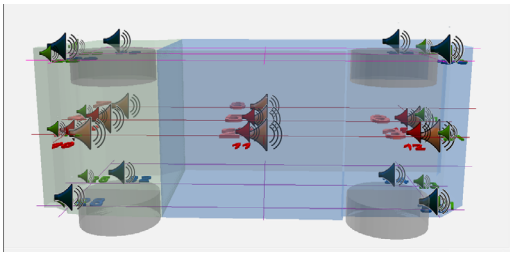

Figure 13. An overall picture of the layout for quantum engine locations for all four stages of R&D activities (bottom view)

11. An overall picture of the layout for quantum engine locations for all four stages of R&D activities is shown in Figures 12 and 13.

At stage 4 it is necessary to implement pilot projects

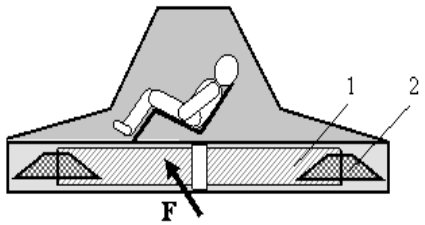

Figure 14. A layout of a flying car with a quantum engine (1); (2) — an activator deforming QST and creating the controllable thrust vector **F**

for the establishment of enterprises for the construction of quantum engines and quantomobiles, and their technological equipment. According to the results of stages 1–4, it is necessary to prepare monographs, study guides, training courses for engineers and teachers in the field of quantum car construction, to introduce relevant specialties in higher and vocational education institutions.

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Stage 5 — elaborating concepts of quantomobiles based on quantum engines of various functionality.

This is the stage of long-term prospects. R&D activities will be devoted to the sophisticated functionality of the quantum engine unit in a quantomobile, possible abandonment of supporting wheels, implementation of the concept of a flying car. This concept was suggested by V. S. Leonov (see Figure 14 (Leonov, 2010a)).

Conclusion

Despite the lack of experience in the field of creation of quantum cars quantomobiles in the world, the overview of the aspects of their staged formation and creation has proved to be possible. In the author's opinion, the tasks of achieving the three-pronged goal set at the beginning of the article have been solved at the conceptual level.

The comprehensive theory of Superunification, acting, among other things, to overcome gravity and inertia forces, will undoubtedly be further developed and improved, both structurally and descriptively. However, even now, after a series of experimental proofs of its provisions concerning the possibility of using the energy of the physical vacuum in technical prototypes and models, this theory can become the basis of computational techniques and engineering solutions for future quantum engines and "fuelless" vehicles, including land vehicles.

This gives an impetus to the permanent preparation of the transport industry for the appropriate re-equipment.

Within the framework of this preparation, the justified staging of R&D activities on the creation of a technical facility, which does not exist yet, is important. Therefore, based on his expertise level, the author made an attempt to present the sequence and contents of R&D activities on the creation of a future quantomobile.

This staged plan may seem too optimistic. But who knows?

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