Gravity

This book considers mechanics of gravity based on the Theory of Everything

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Theory of Everything homepage: http://knowledgeofeverything.com

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Contents.

NOTE: the author's knowledge of English is far from perfect, but I hope you will be able to understand the essence. This article is released to public domain, so you are free to make (or arrange) correct translation.

It is assumed that the previous article with short description of some of concepts of Theory of Everything was read and understood:

Introduction to Theory of Everything.
(http://knowledgeofeverything.com/koe_intro.html)

Short list of very basic substances of nature and of their traits:

- Space is three-dimensional and homogeneous.
- Time is constant.
- Matter exists as infinitely small particle with simple mechanical traits (of motion and interaction).
- There's no limit on:
    - size of space,
    - speed of motion of particles.

(From the above it follows that) All processes (/universe) are fully deterministic.
All observable nature and variety of traits and processes is expression of complex schemes of interaction of matter consisting at the basis of infinitely small particles with simplest traits.

1. Gravity.

1.1. Introduction.

Here’s presented very short repetition of the main basic traits and interactions (from the main book) used at this article.
As was already said at the previous article, on of critical structures, which makes possible existence of gravity (and further of all observable complexity of nature), is a system of nearby standing particles moving at the same direction with the same speed.
Such system:

(1) preserves simplest traits of motion and interaction, but
(2) during collision with similar system of single particle:
  (2.1) can split up into smaller particles and systems of particles, and
  (2.2) according to mechanics of distribution of momentum, can accelerate smaller systems of particles.

Described above scheme with its simplest traits is the only thing required to build all of observable surrounding complexity of interactions and representations of matter, what also includes concept of energy which sustains processes.

Such system of particle systems and of simplest particles, interacting among themselves, constantly looses part of particles which fly out of this group/cloud but, when flying out, they transmit momentum at the reverse direction and in such a way keep together cloud of particles and systems of particles. During this process largest systems of nearby standing particles have smallest probability to fly away from the group because of low speed (relatively smaller systems of particles) and smallest once have the largest probability because of high speed.
Because of this such group consists mostly of large particle systems which constantly emits particles and smaller particle systems with larger speed.
And this is graviton, the most basic complex structure with repulsive field.
Field created by graviton, being exclusively repulsive, does not create attraction between gravitons.
Interacting gravitons can smoothly transmit momentum through the field and in such a way push each other without destruction of the structure of graviton.

Approximate representation of the graviton:

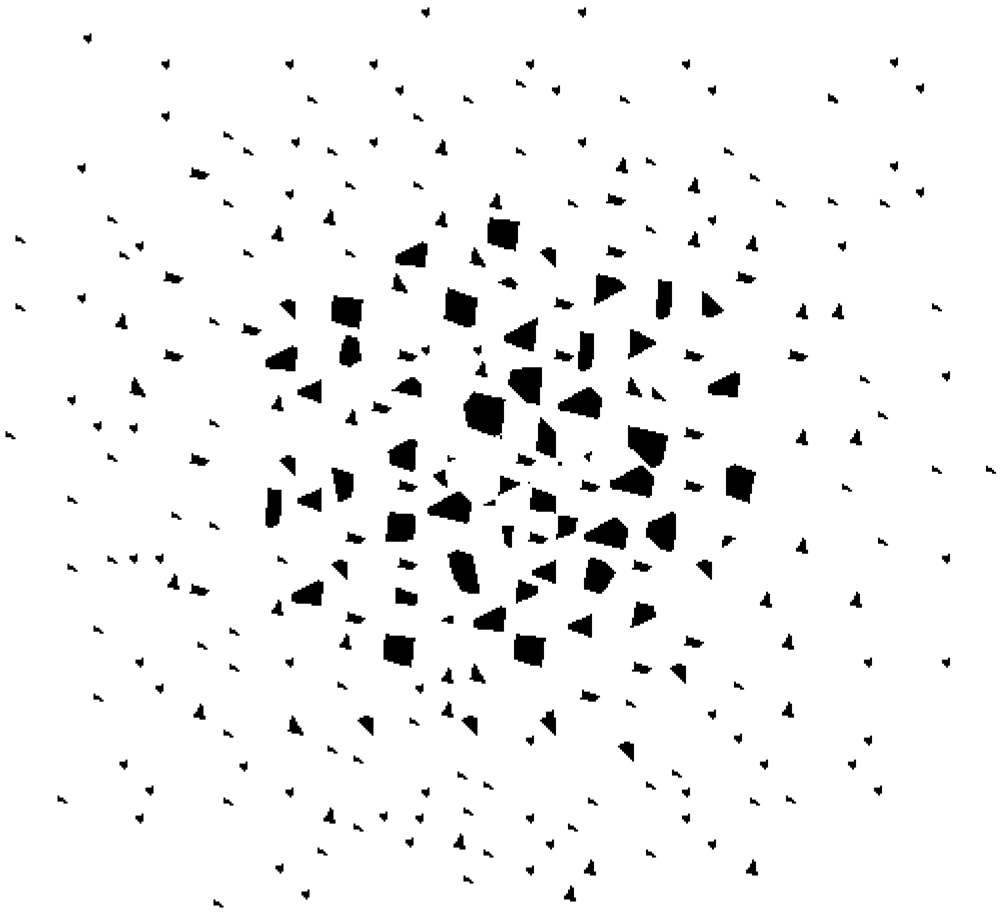

Figure 1.1-1.

Schematic representation of gravitons at space:

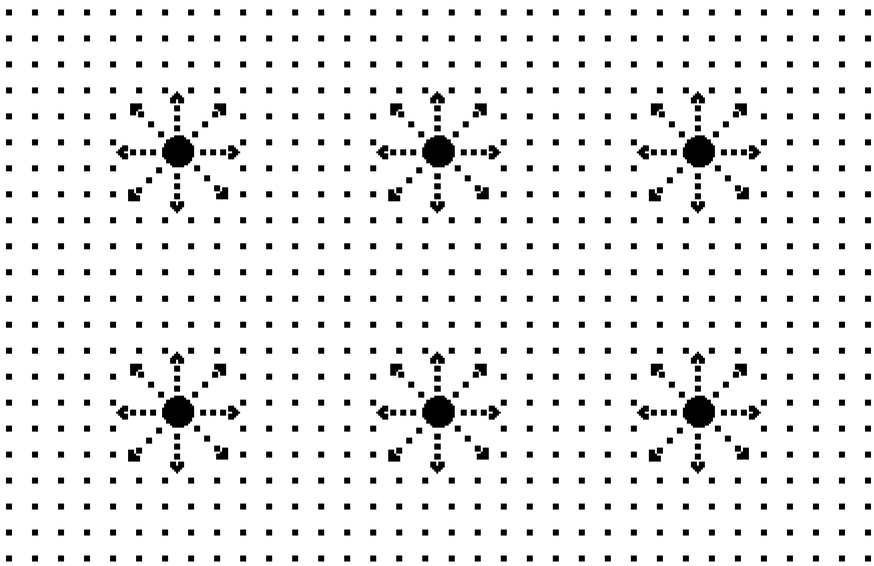

Figure 1.1-2.

Space between gravitons contains simplest particles and systems of nearby standing particles emitted by gravitons which transmit interaction.

Further groups of gravitons can form more complex structures:

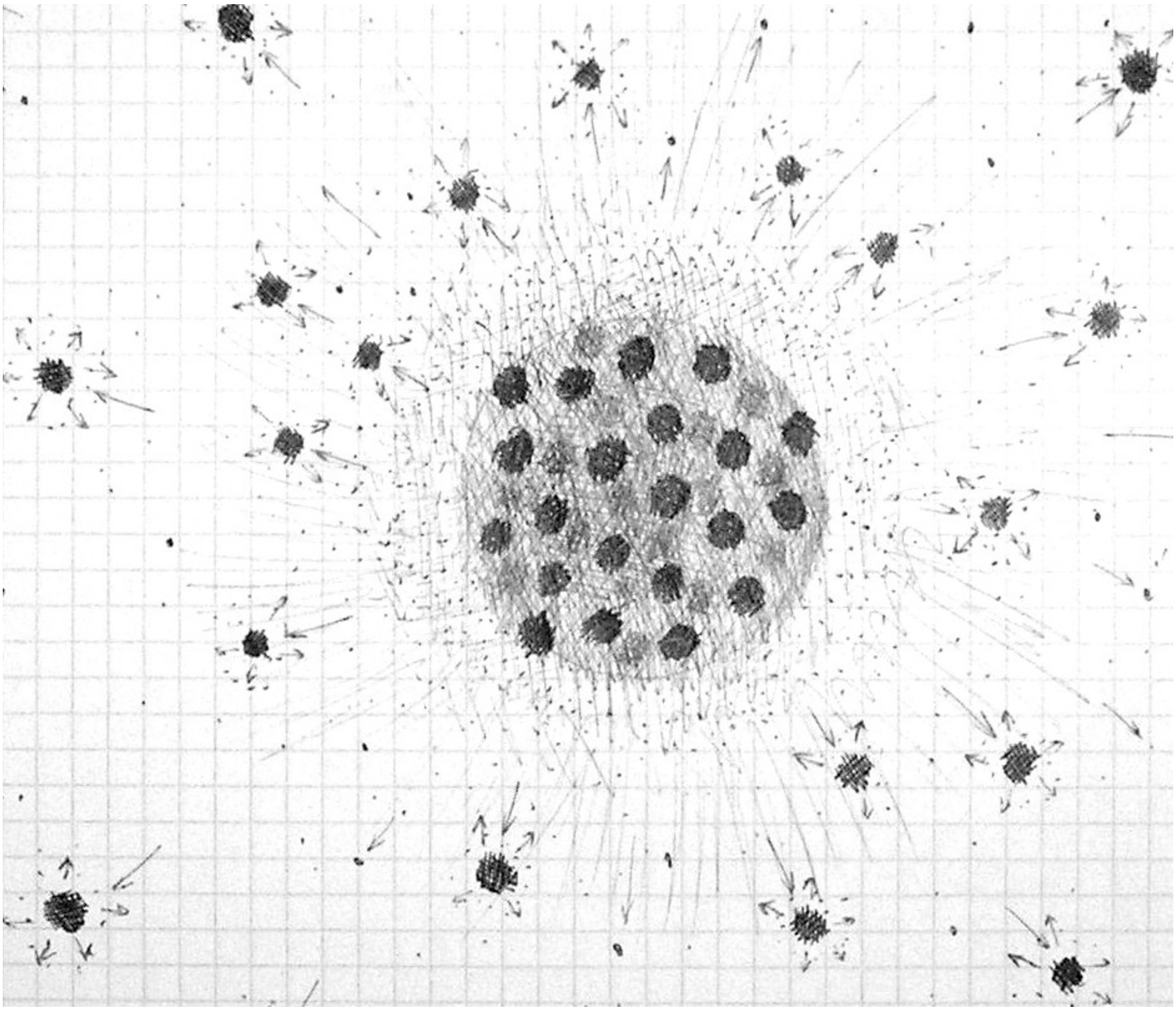

Figure 1.1-3.

which schematically can be represented in the following way:

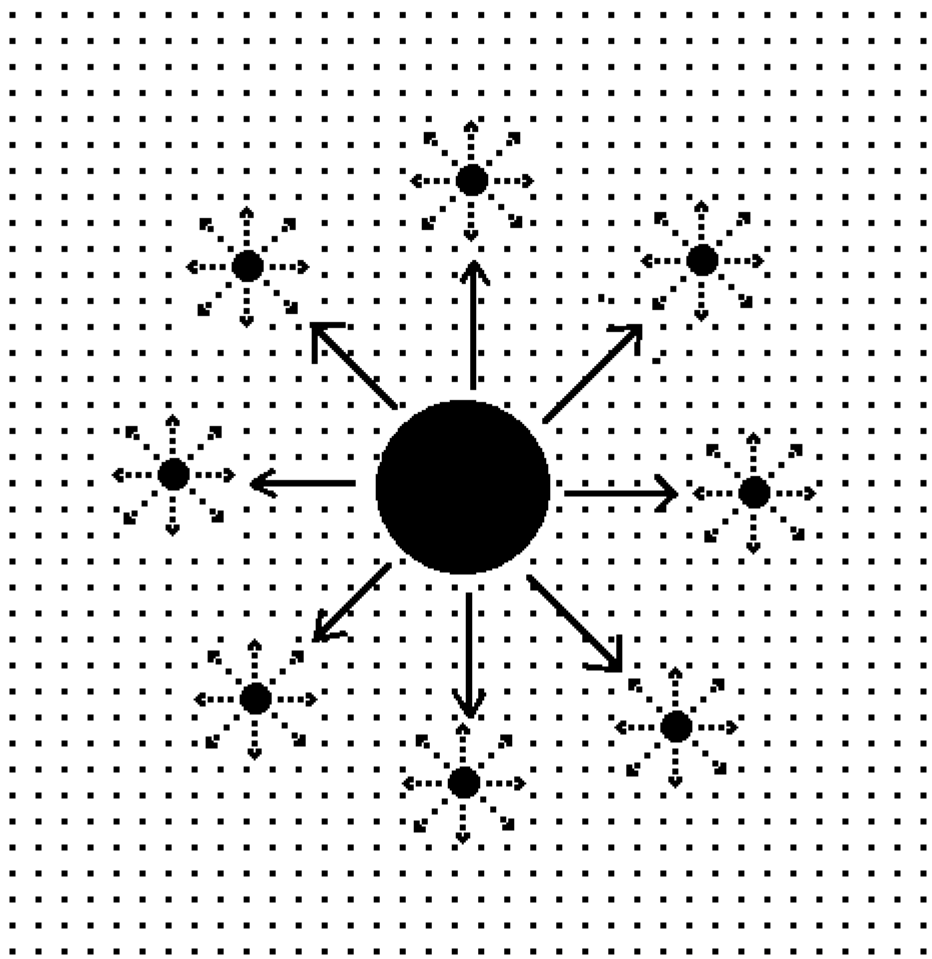

Figure 1.1-4.

And such system already represents object with gravitational field, a field which can create attraction.
Gravitons are emitted by the body and, while flying away from it, constantly emit more simple particles in all directions, and that part of them, which flies backward towards emitting body, creates flow of field which can attract/push other objects backward towards emitting body.

Further is used the following notation:

g_1	primary particles of gravitational field (gravitons).
g_2	secondary particles of the field, which are particles emitted by gravitons.
Primary flux (/primary flow of the field)	Flow of gravitons emitted by the body. Also can be referred to as "g_1 flux" (/flow of g_1 field).
Secondary flux (/secondary flow of the field)	Flow of secondary particles of field. In most cases is implied the part of this flow which is returned back towards the body emitting primary particles of field. Also is referred to as "g_2 flux" (/flow of g_2 field).

Let's consider critical trait concerning mass and speed of described above fluxes.
Bodies interact using field which is constantly emitted by bodies, but at the same time, loss of mass by bodies is negligible (tends to zero) and from this it follows that for the field, in order to be capable to transmit necessary (observable) momentum by particles of the field (and as a result – interaction force), particles of the field should have very high speed.

From this also follows dependence between masses:

primary particles have extremely small mass compared to emitting body (and compared to atom), and secondary particles have extremely small mass compared to primary particles.

This also follows from mechanics of distribution of momentum, where, in order to transmit large speed and momentum from larger body to smaller, large mass difference is required.

According to this, there’s the following dependence between mass and speed of particles of field:

$$V_b \ll V_{g1} \ll V_{g2} \quad (1)$$

$$m_b \gg m_{g1} \gg m_{g2} \quad (2)$$

where:

V_{g1}	Speed of primary particles of field g_1 (gravitons).
V_{g2}	Speed of secondary particles of field g_2.
V_b	Speed of body.
m_{g1}	Mass of primary particles of field g_1.
m_{g2}	Mass of secondary particles of field g_2.
m_b	Mass of body.

It’s obvious that for secondary particles of field mass and speed can be viewed as average value because of (most probable) large random distribution of mass and speed between particles of graviton.

Also often is used expression "work of primary particles of field", what means the following:

One particle g_1 emitted by the body, while flying away to infinity, at all distance constantly (with some frequency) sends back (and also in all other directions) particles g_2, where summary momentum transmitted back is referred as "work done by particle g_1".

This is just verbal notation and it is not used at calculations (in bounds of this article).

Disregarding microscopic mass of particle g_2, their total (transmitted back) momentum is significant because all particles g_1 constantly send back particles g_2.

The main goal of this article is to derive extremely simplified formula of gravity using basic (new) definitions introduced from point of view of Theory of Everything (= from point of view of correct mechanics of gravity) and compare its character of behavior to Newtonian formula, and also analyze whole mechanics of gravity and how it accounts known phenomenons of gravity.

Further at this chapter are considered details of mechanics of interaction of two bodies with use their gravitational fields.

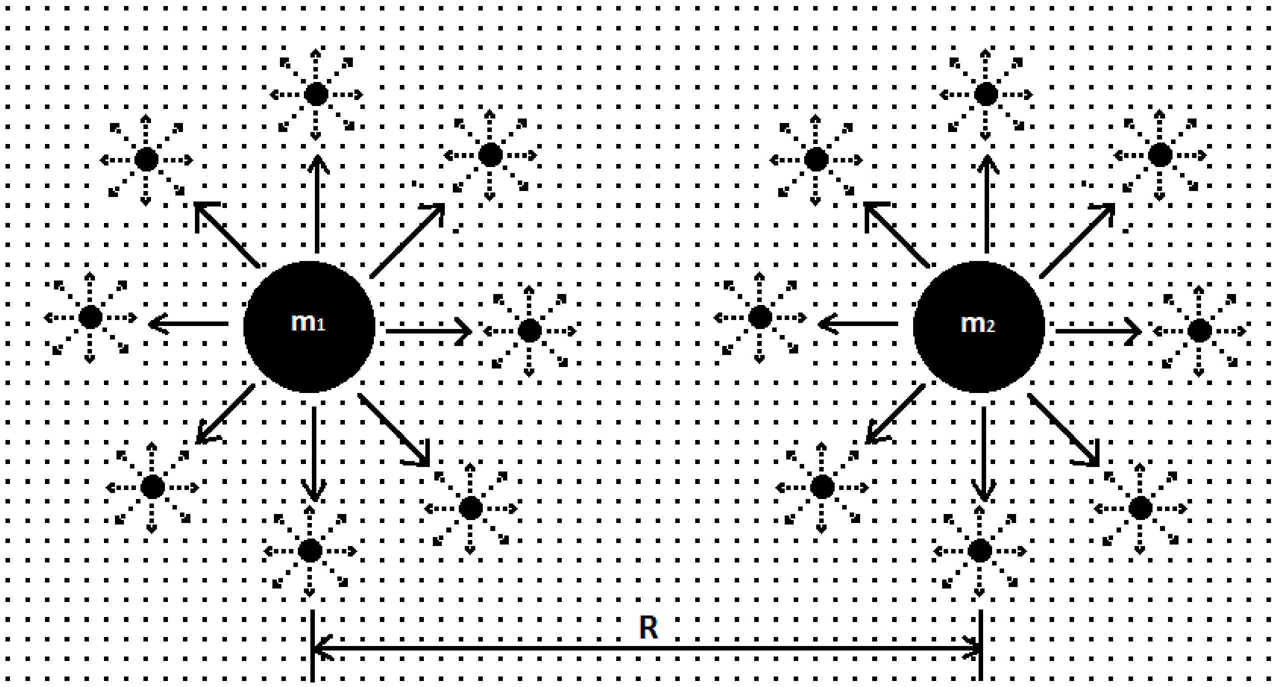

Figure 1.1-5.

In general this is complex mechanics of interaction, but it can be decomposed into separate components, and then analyzed by components using, for instance, the following criteria for decomposition:

1. Body m_1 and its field:
   (1) flux g_1 (primary particles of field),
   (2) flux g_2 (secondary particles of field).
2. Body m_2 and its field:
   (1) flux g_1 (primary particles of field),
   (2) flux g_2 (secondary particles of field),

consider separately three regions of space:

1. $\infty..m_1$
2. $m_1..m_2$ (radius R)
3. $m_2..\infty$,

and also divide them by type of interaction:

(1) repulsion,
(2) attraction.

Let's consider the first and the main (for cosmic objects interacting at large distance) component, which is pushing yourself towards another body with own field.

1.2. Pushing yourself towards another body using own field.

In the absence of surrounding bodies, outgoing flow of g_1 field and generated by it reverse flow of g_2 field are uniform and compensated at all sides in respect of pressure created by g_2 particles (considering bodies spherical).

When the second body m_2 appears, it closes part of the flow of outgoing and returning particles of the field emitted by m_1 passing through it.
When considering large space objects, they can be viewed as almost impermeable to the gravitational field, since the particles of the field have very high probability to come across the atoms of the object and get reflected.

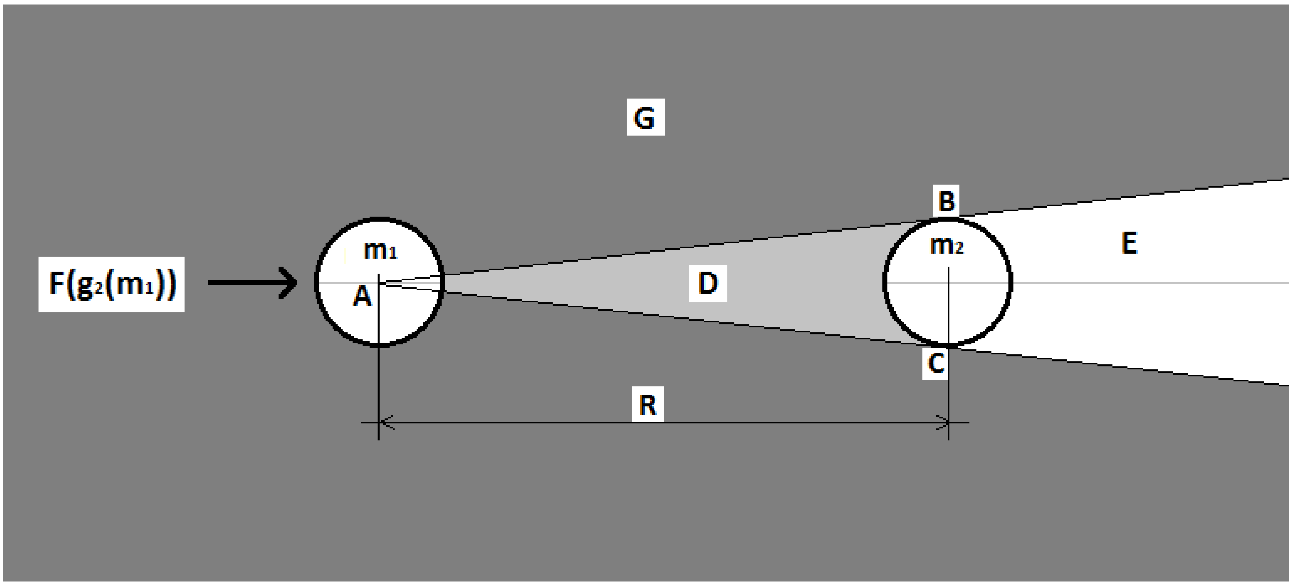

Figure 1.2-1.

Designations on the scheme:

BAC	The emission angle at which the body m2 obstructs the passage of the field from the body m1, where A is the center of the body m1.
G	The region in which are presented uniform (not obstructed) g_1 and g_2 fields emitted by the body m_1.
D	The region in which is presented g_1 field emitted by the body m_1, and also generated by it the g_2 field which, at such distance (in this context) can be considered as negligible compared to amount of g_2 field generated in the region G, where g_2 field is represented as sum of field generated by g_1 particles during fly away to infinity (in contract to the amount of g_2 field generated at the limited region D).
E	The region where field emitted by the body m_1 is absent. In fact, there is a g_2 field from m_1, because the g_1 particles located above and below the E region emit g_2 particles in all directions, including up and down, and in such a way the g_2 field from body m_1 gets there, but when considering only g_2 field which is generated by g_1 field in perpendicular (to the surface of the emitting body) outgoing directions (what constitutes its major part), then it is missing there because particles g_2 from the sector D do not get there (and there are no g_1 particles (from body m_1) which would generate them).
$F(g_2(m_1))$	The force with which the g_2 flux (created by the body m_1) pushes itself towards the body m_2 due to the absence on that side (sector BAC) of the pressure of the g_2 particles which is balanced/compensated for m_1 in all other directions. The pressure of g_2 particles from the region D is present, but the amount of g_2 particles generated at a distance R is negligible compared to the amount generated from the opposite side during fly away of particles g_1 to infinity ($R/\infty \approx 0$).

Since this force is the main component (for large space objects), then it is this part that needs to be analyzed in detail with attempt to derive (in this article as extremely simplified and generalized) formula and compare it with Newton's formula.

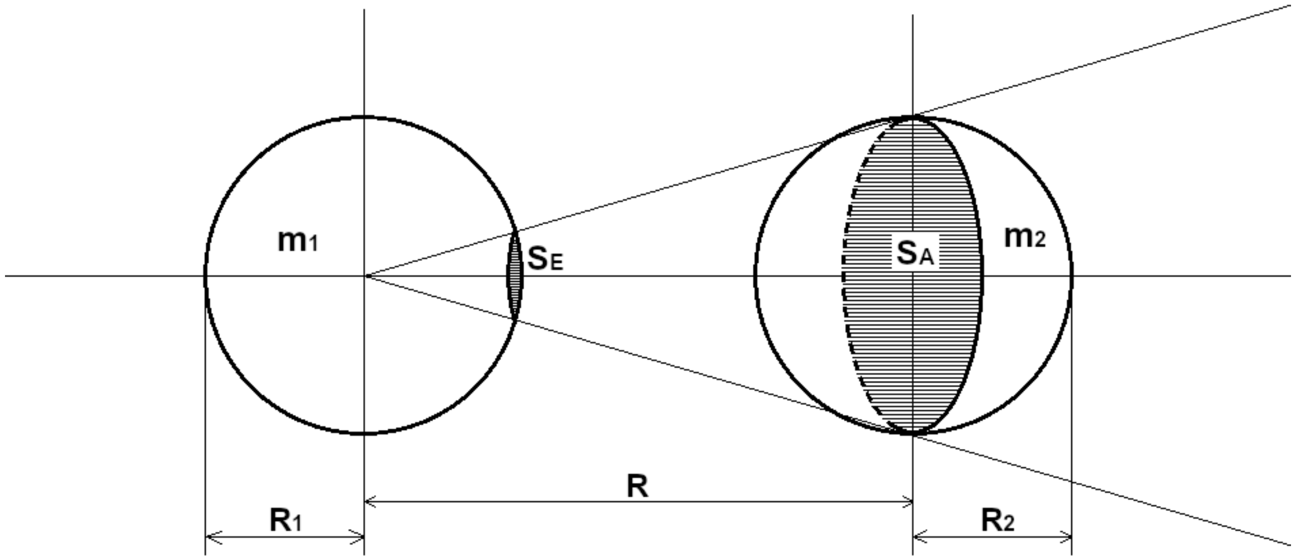

Figure 1.2-2.

Two defining characteristics for this component of gravity are the emission area in the direction of the obstructed sector of m_1, and the absorption area of the body m_2, which in the diagram are depicted as:

S_E	the emission area at the surface of m_1 obstructed by the body m_2.
S_A	the area of absorption of the field by the body m_2, which is the area of cross-section of m_2, perpendicular to the straight line connecting the centers of the bodies.
S_{m1}	(not depicted at the diagram) whole area of the surface of the body m_1.

Since the area (both emission and absorption) depends on density, then for simplicity here we take the density of the substance of all bodies as equal, which makes it possible to exclude it from the formulas (for this simplified consideration).

The area of whole emission surface of m_1:

$$S_{m1}=4\pi R_1^2$$

The amount of the field at a point on the sphere of emission (denoted here as the force):

$$F_{point}=\frac{1}{S_{m1}}=\frac{1}{4\pi R_1^2}$$

The force that pushes the body m_1 towards m_2 (by the g_2 field emitted by the body m_1):

$$F(g_2(m_1))=F_{point}\,S_E$$

In order to find S_E, the radius of m_1 can be imaginary expanded up to R (and the resulting sphere is denoted as $S_{m1}(R)$), and then S_E can be found as the ratio $\frac{S_{m1}(R)}{S_A}$.

Accordingly, in this case, we can write the ratio:

$$\frac{S_{m1}(R)}{S_A}=\frac{S_{m1}(R_1)}{S_E}$$

where $S_{m1}(R_1)$ is S_{m1}, which by analogy with $S_{m1}(R)$ is written down with clarification of the radius.

From this follows:

$$S_E=\frac{S_A S_{m1}(R_1)}{S_{m1}(R)}$$

Substituting $S_A=\pi R_2^2$, $S_{m1}(R_1)=4\pi R_1^2$ and $S_{m1}(R)=4\pi R^2$, we get:

$$S_E=\frac{(\pi R_2^2)(4\pi R_1^2)}{4\pi R^2}=\frac{\pi R_1^2 R_2^2}{R^2}$$

This should be an approximate value, because S_E is a convex region, and S_A is (counted here as) flat region, what is acceptable for this generalized analysis (and is used here for shortness of the formula).

Substituting the S_E in the formula for the total force:

$$F(g_2(m_1))=F_{point}(R_1)\pi\frac{R_1^2 R_2^2}{R^2}$$

The gravitational field emitted by a substance is constant value, which is the same for each nucleon, and it characteristic of a substance similar to mass of a substance. This constant (which is strength of radiation of the field at the point of a substance) can be found from experiment, where in this case, instead of experiment, can be used existing formula which approximates experimental data, like Newton's formula, and thus this gravitational field radiation constant can be calculated and substituted here.

In the formula above it depends on R_1 and R_2, but since we got rid of density, assuming here that it is the same for all bodies, the real dependence instead of radius includes mass and density:

$$F_{point}(m,\rho)=const$$

The amount of gravitational radiation can be considered as a constant value for any nucleon, but for macro-bodies, taking into account the density difference, the radiation of the amount of gravity from a surface unit becomes constant for each pair of values from the combination (m,ρ) .

Let’s rewrite this formula in the form with dependence on mass and density, but only by showing the dependence itself without expanding it (for simplicity of the formula), and also change the constant π to K and the distance between the bodies to more common r:

$$F(g_2(m_1,\rho_1))=F_{point}(m_1,\rho_1)K\frac{f(m_1,\rho_1)f(m_2,\rho_2)}{r^2}$$

The main difference from Newton's formula is the presence of density of a substance, what is caused by the use of emission and absorption areas in basic expressions, but in general this formula is equivalent to Newton's formula, since it has only one variable (r) with the same inverse-square dependence, and in the upper part the same way stands the dependence on the mass of each of the bodies.

This was the very main purpose of this article:

1. Express the basic essentials of the mechanics of gravity arising from the Theory of Everything in the form suitable for use in formulas.
2. Make the formula in the most general form.
3. Show that it is:

   consistent with experimental data

   = is equivalent to the existing formulas approximating the experimental data (as, for example, the Newton formula for the general standard case of interaction of large cosmic bodies).

The full formula of gravity will be equal to the sum of all the forces, which in this article are divided into components:

$$F = F_1 + F_2 + F_3 + \ldots = F\left(g_2\left(m_{1,}\rho_1\right)\right) + F_2 + F_3 + \ldots$$

of which, in the form of a formula (in general and approximate form), here is presented only the first most significant component (for this case of consideration of distant large space objects, where the remaining components of the mechanics of gravity are negligible).
The remaining components complement and clarify the general mechanics and become expressed on the background of the examined, or even the main components, in other cases, such as at a short distance, significantly different size of bodies, or a small size of one of them.

Also it should be noted that, in contrast to the classical (preceding Theory of Everything) expressions, here the basic operator in the formula is addition, and, accordingly, there is no need to make a single formula based on the multiplication operator (and equivalent), where one of the main problems in such formulas is the "mathematical" superposition of one process on another and in the opposite direction due to approximation in one such mathematical formula of various processes.
This is not a mathematical trick intentionally introduced here, but a banal reflection of reality and the mechanics of gravity, where the individual components, which in fact can represent a different "nature"/mechanics of interaction with extremely different character of running of the processes at different conditions (of change of distance, density and size of objects), at the basis are added as a sum of mechanical forces, and accordingly there is no overlap/creation of errors by approximation, because each component is added exactly to the extent that it is expressed and where it is expressed.

1.3. Description of partitioning of space into areas.

Let’s divide the entire space (relative to the two bodies under consideration) into three main areas, where the behavior of the field can be considered uniform:

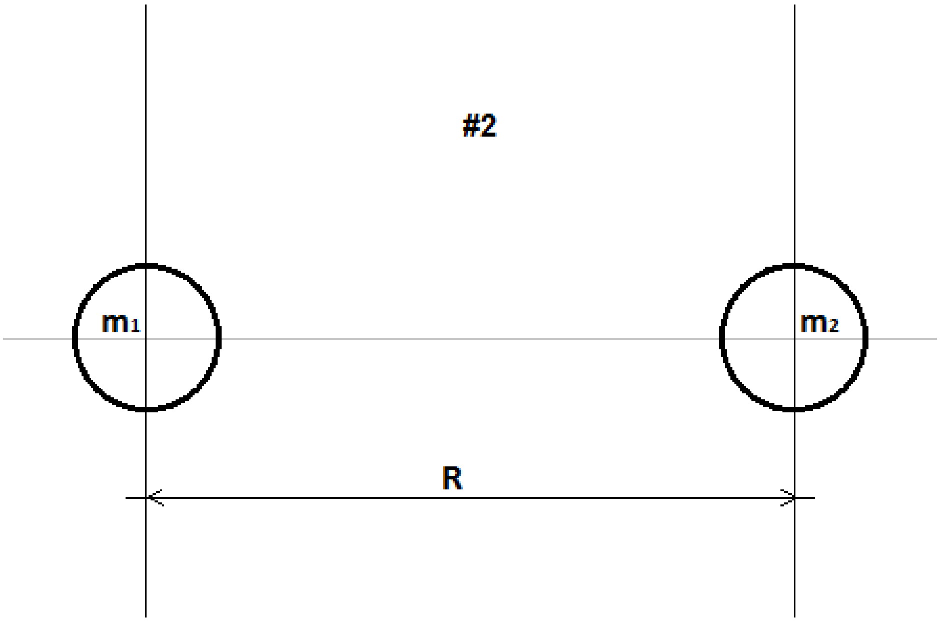

Figure 1.3-1.

Also, when considering areas #2 and #3, the sub-areas inside the BAC sector (area D) and its continuation behind the body m_2 (area E) are considered separately:

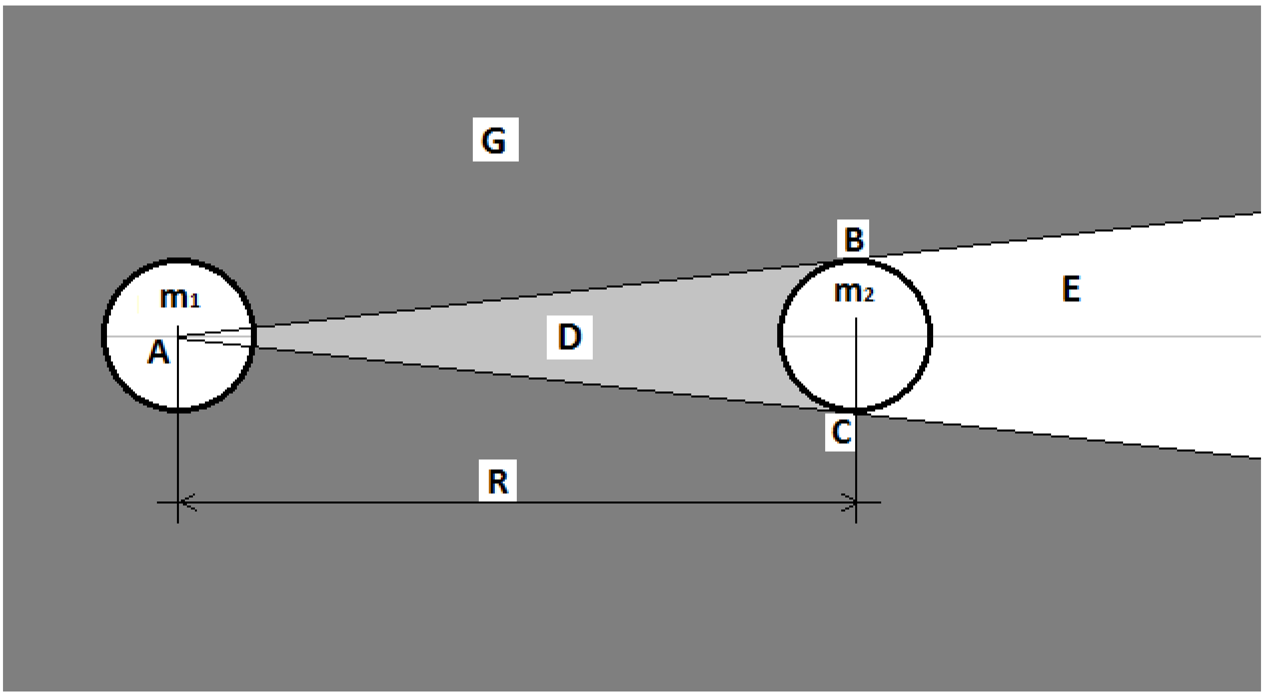

Figure 1.3-2.

Only the influence of the field of m_1 on itself and on the other body (m_2) is considered, and accordingly, to obtain the total force acting on each of the bodies, it is necessary to add in a symmetric way the influence of all the forces created by the other body on this one.

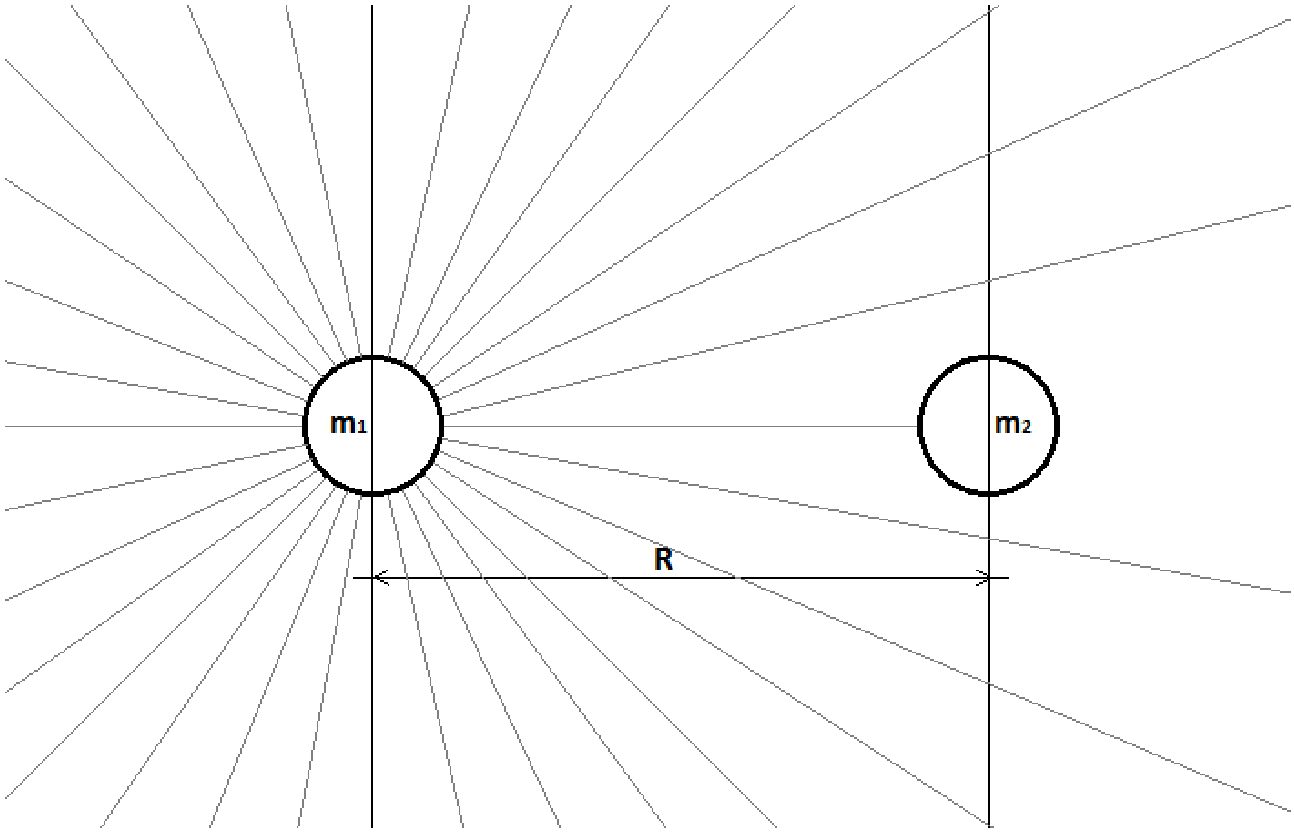

Figure 1.3-3.

1.4. Distance of action of the g_1 field.

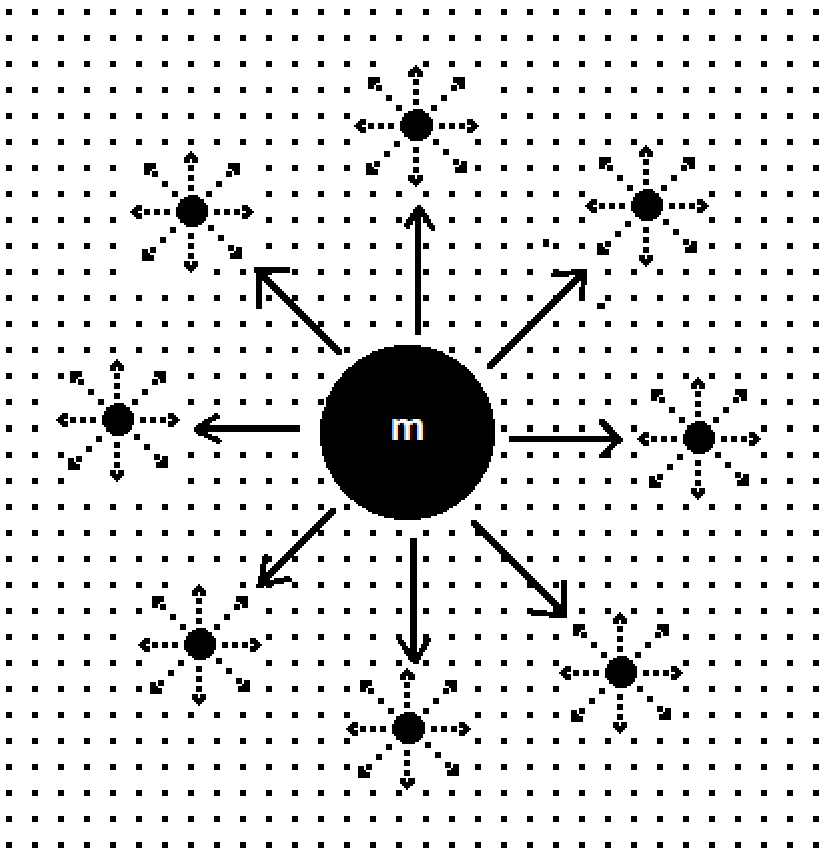

Figure 1.4-1.

It is obvious that the presence of a field in space interferes with the movement of other objects, which actually is expressed in the influence of the field of one body on another, but in addition to the effect expressed as sum at the macro level, what is considered in this article as two main macro effects of the gravitational field:

(1) the whole mechanics of gravity,

(2) deceleration by field,

this is also expressed at the level of movement of the particles of the field inside of the field (which also manifests itself in such processes as interference and diffraction, and was partially considered in the previous article at the part with description of resolution of wave-particle duality) and in the context of consideration of the gravitational field at this stage the motion of the particle g_1 and of the field g_2 created by it through the gravitational field is of special interest, and more specifically the distance at which the particles g_2, emitted by the particle g_1, return to the body that released this particle g_1.

In reality, the dynamics of behavior of the particles of a field is complex (due to collisions), but this article uses the following simplifications based on averaging data (in those parts of the article where these details matter):

> It is assumed that one particle g_1 flies from the body to the maximum distance at a constant speed, where it then instantly ceases to act on the given body, and the averaged parameters are as follows:
>
> 1. A particle may collide with other g_1 particle (or gradually with a multitude of g_2 particles) and change the direction of motion, but since with the same/some probability another particle g_1 may take its place, it is assumed that this is the same particle.
> 2. The particles g_2 returned by it have a gradual dynamics of decreasing the probability of reaching the body when flying in the opposite direction, which is averaged and the termination of action of the g_1 particle is considered instantaneous.

On the other hand, particles g_2 that fall on other particles and collide when returning in the opposite direction, transfer their momentum to them, and accordingly there should be no loss.

The second probable reason for the termination (or limitation of the distance) of action of own field is the (slow) displacement of the body from the point from which this field was released.

But, nevertheless, regardless of the main reason, for bodies in the solar system, this effect is present and can be observed experimentally on the surface of the Earth (the experiment is discussed further in that article), therefore we introduce the following notation to describe it:

t_{g1}	the time of action of the particle g_1 on the radiating body (by particles g_2).
L_{g1}	the maximum distance that particles g_1 fly off while acting on the radiating body, or the distance that particle g_1 flies off from the body that released it during t_{g1}.

In this article, the idealized expression "the work of the particle g_1 during its flying away to infinity" is sometimes used, and, accordingly, it is assumed "during its flying away to the distance L_{g1}".

Also later in this article, an attempt was made to calculate t_{g1} (with extremely rough approximations) based on Podkletnov's experiment of shielding of the gravitational field by a rotating superconducting disk.

1.5. (Area #2) Pushing away using own field.

The field of m_1 in this sector repels the body m_2 (with both field components).
The influence of the individual components of the field must be split into separate forces/components because they act in different regions of space:

- the g_1 field acts only in the BAC sector,
- the g_2 field acts in the whole volume of space between m_1 and m_2.

For a start can be specified one nuance of the movement of particles $g_2(m_1)$ relative to m_2, which is characteristic only for this area:

> the velocity of the particles g_2 is added with the velocity of the particles g_1 since they move towards m_2 (whereas in all other cases, when particles g_1 fly away from the body, their velocity is subtracted from g_2).

The velocity V_{g2} of ejection of particles g_2 from g_1 is constant relative to g_1, but relative to other bodies, they must be added.
This scheme considers g_2 particles emitted by g_1 when moving along the X axis and shows the resulting velocity as V'_{g2}, at the top for particles flying in the opposite direction, and at the bottom to m_2.

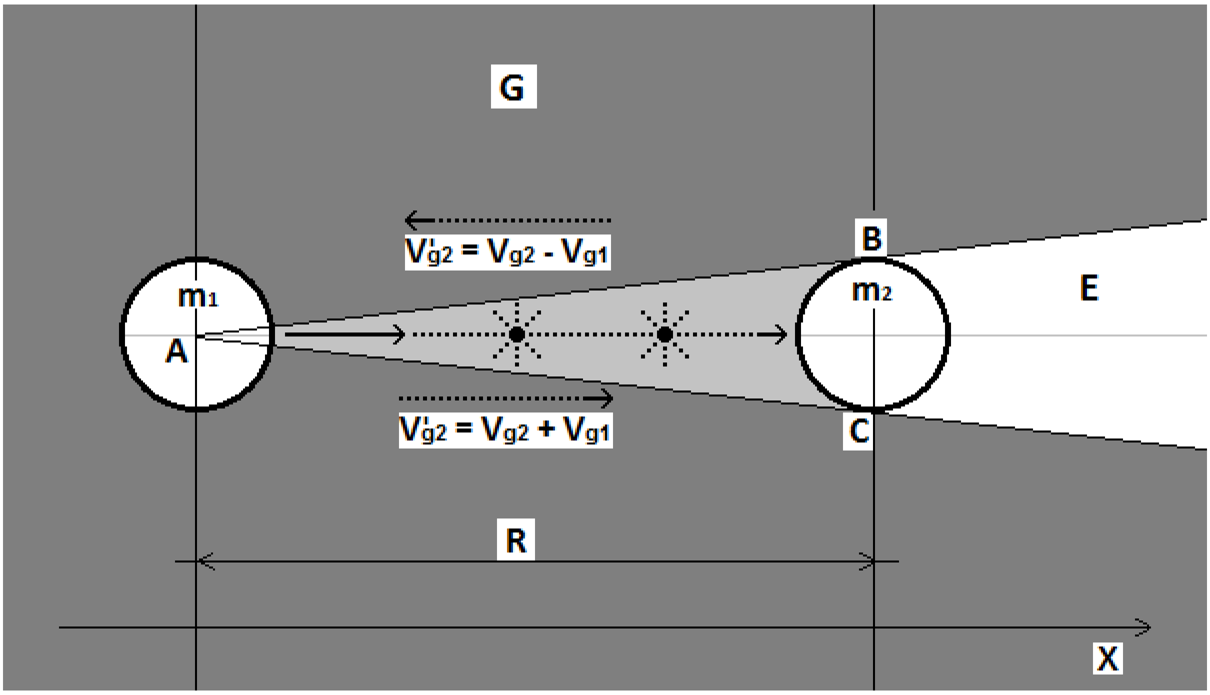

Figure 1.5-1.

This component (the addition of the velocity V_{g1} to V_{g2}) should be pretty negligible, because firstly $V_{g2} >> V_{g1}$, and secondly, this must be taken into account for limited space. For this reason, later in this part of the article it is considered as negligible and is not mentioned.

Repulsion of m_2 by the field $g_1(m_1)$.

Large space objects must be extremely impermeable by the gravitational field (by both its components) and, accordingly, particles g_1 in the BAC sector transfer their momentum to body m_2 when it is reached.

For exact position of the bodies everything is quite simple, but with variance of distance taken into account, the calculations become complicated because the absorption area $S_A(m_2)$ of the field changes with change of distance, as also does the number of g_1 particles (emitted from the $S_E(m_1)$ surface) that must be taken into account.

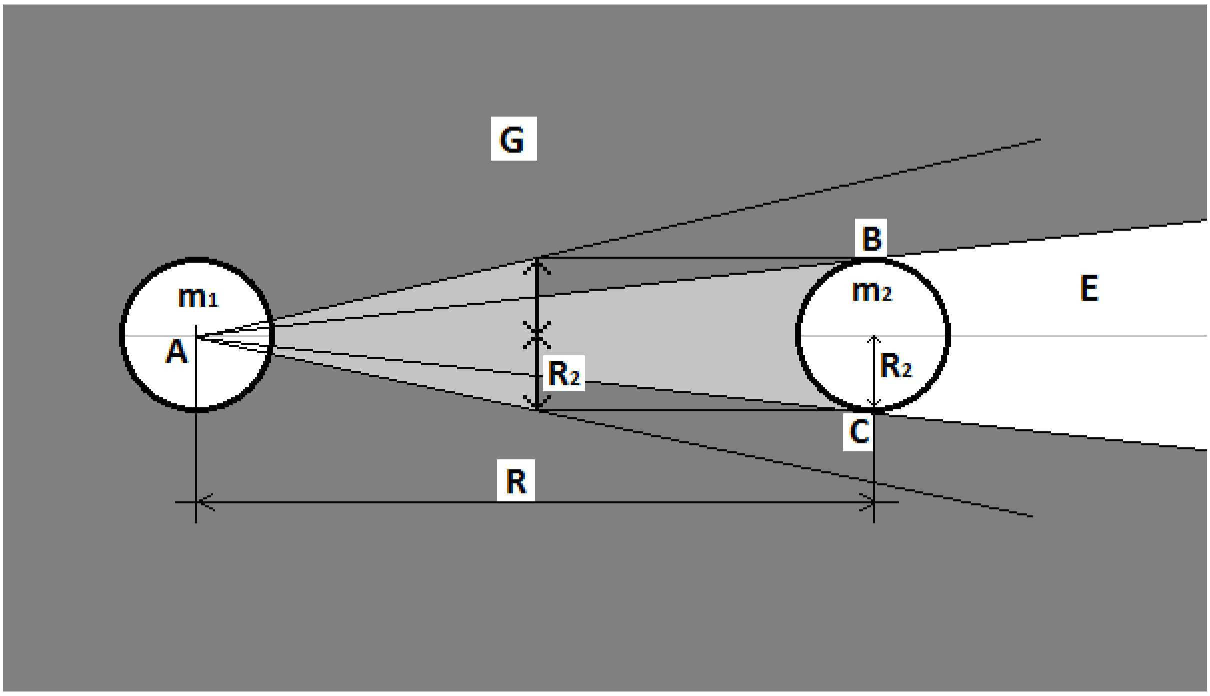

Figure 1.5-2.

Because of this with a decrease in the distance between the bodies, this field component increases the repulsive force, what, for large distances, should be insignificant.
Let's denote this force as:

$F(g_1(m_1))@2$

where the additional index @2 at the end of the formula indicates the area in accordance with the division of space into areas.

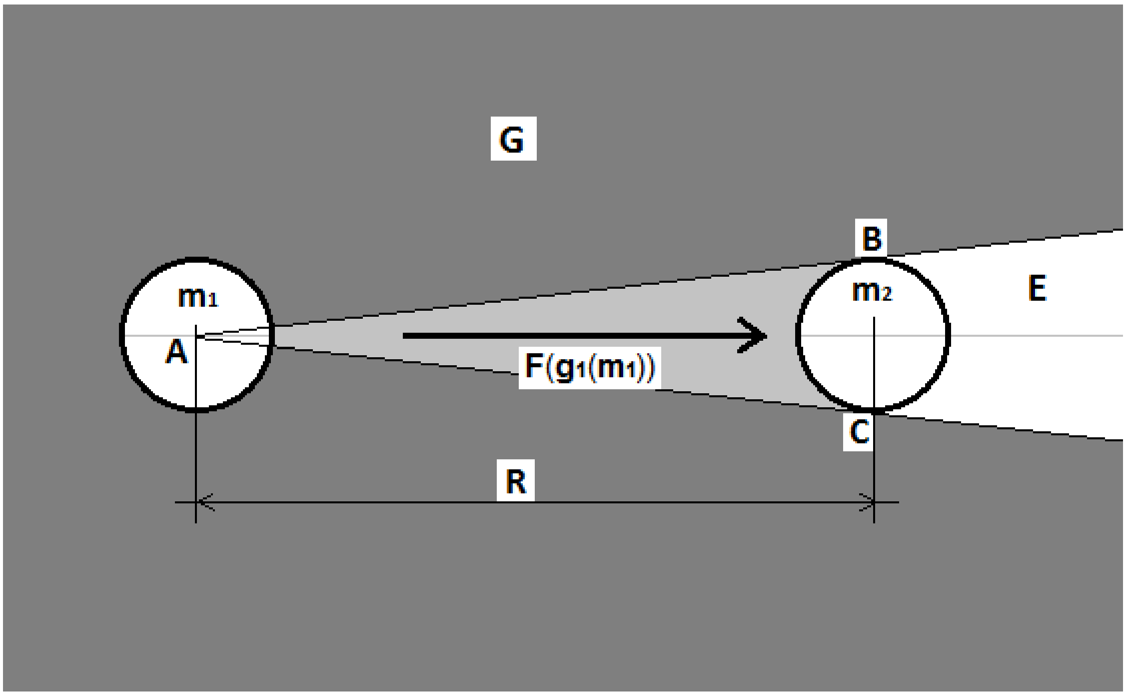

Figure 1.5-3.

Repulsion of m_2 by the $g_2(m_1)$ field.

This figure shows the particles g_1 (and their direction of movement from m_1) and that they constantly (with a certain period) emit particles g_2 in the direction of m_2 (and also in other directions), which act on m_2 and push it away. The force of such particles obviously depends on the radiation angle (relative direction created by the resulting repulsion force).

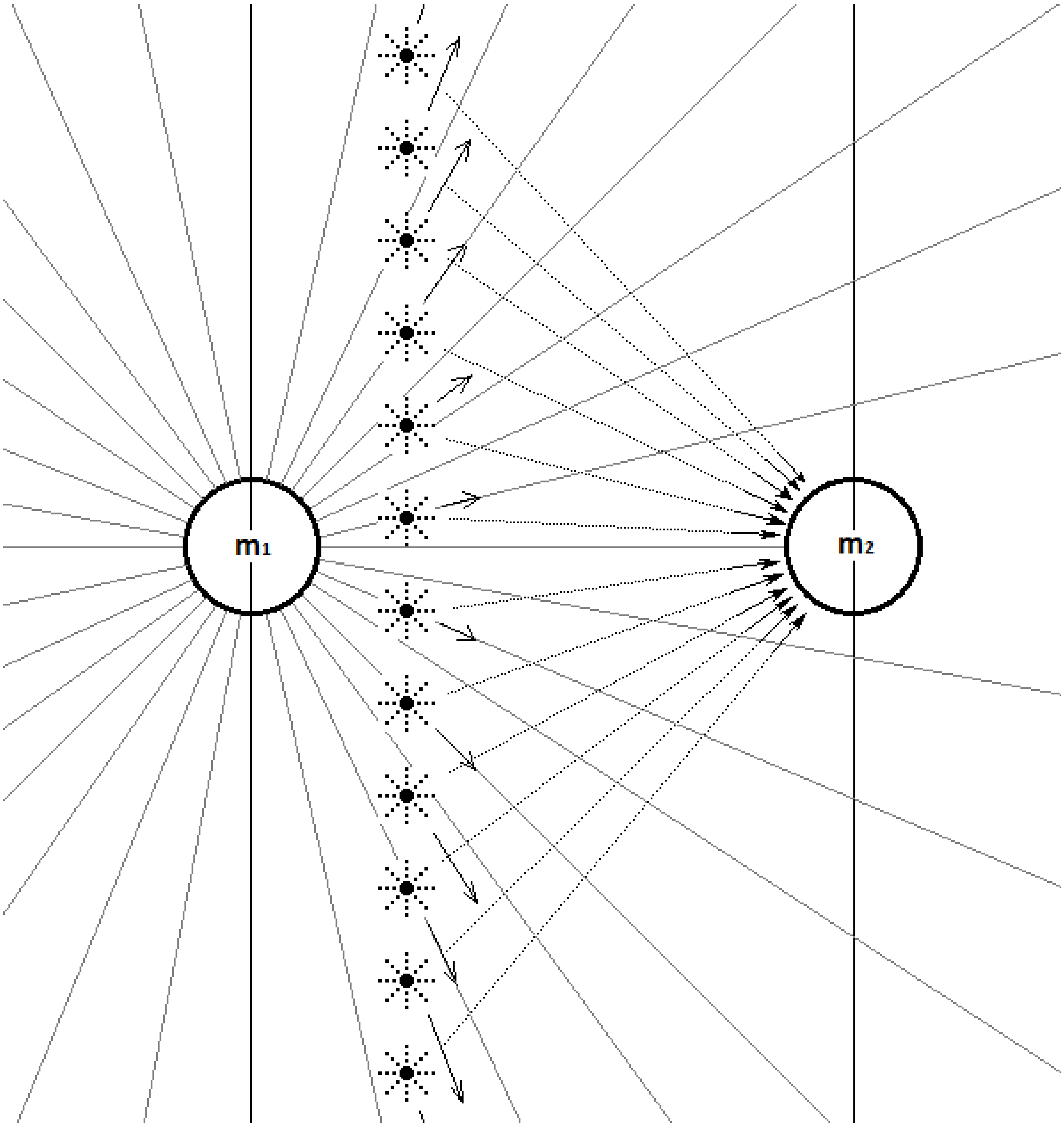

Figure 1.5-4.

Since $V_{g2} >> V_{g1}$, then it can be said that the amount of momentum that reaches m_2 at each point of time (/in each radiation period of particles g_2 by particles g_1) is equal to the number of particles g_1 in the volume, and the change of this force is proportional to the change of the volume between the bodies (with change of the distance), which gives a linear dependence.
Taking into account that for all planes (which are perpendicular to the straight line connecting the bodies, as shown by alignment of the particles g_1 in the figure which indicate one of such planes) the average angle of action decreases with advance from m_2 to m_1, then the dependence of change of force with change of the distance becomes nonlinear (since with increase of the distance the

newly added layers from the side of m_1 will have average angle which creates larger force of action).

Let's denote this force as:

$F(g_2(m_1))@2$

On the one hand, it could be stated here that this the very component that creates a significant increase in the force of gravity with decrease of the distance (which Mercury and comets are experiencing), but the problem is that the momentum of the g_2 field in a limited space should to be negligible due to its extremely small mass. Also taking into account that with advance (along the volume between the bodies) from the line connecting the bodies (moving up and down in Figure 1.5-4) the force quickly decreases because of the need to take into account the angle of action, this makes the negligibility of this force more obvious.

After the mass and velocity of the particles g_1 and g_2 will be found (what is not done in this article), as well as some other parameters of gravitational field, such as the emission frequency of these particles, then all this can be calculated and said more definitely (about real influence of this component of gravity).

As a conclusion, it can be said that the two forces considered in area # 2 have insignificant effect due to the limited volume of action and the rapid increase in the angle of action (= decrease in the force of action), compared to the segments (as considered in the previous chapter) which summate the momentum of the field in the volume expanding to infinity and where the action is directed to the center of the bodies (= without loss of force due to the angle of action).

1.6. (Areas #1 and #3) Influence of $g_2(m_1)$ field on m_2.

Consideration of the influence of the g_2 field is complicated by the fact that each g_1 particle spreads the g_2 field in all directions and it falls into many areas, including those located behind the bodies outside the line of sight.
In this case this can be overcome by considering the distribution of the field g_1 (implying that the resulting action of g_2 created by it can be calculated by the g_1 field).

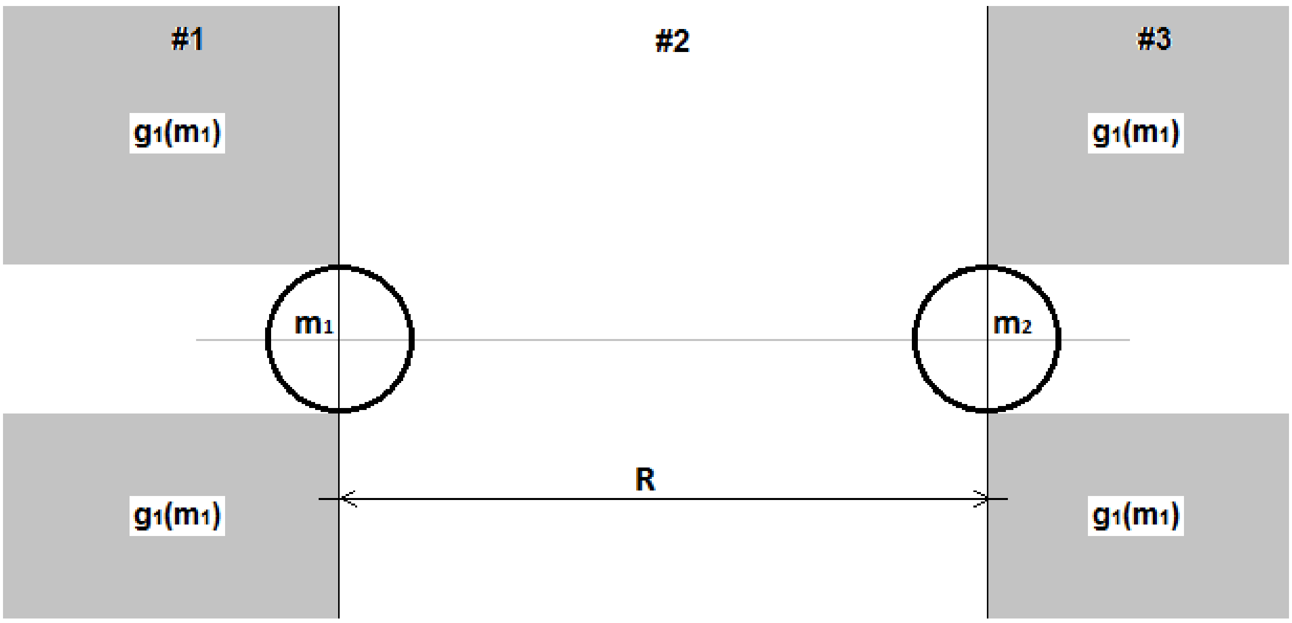

Figure 1.6-1.

Gray areas indicate the location of the (not considered yet) field $g_1(m_1)$.

(Apart from the distance R) This field is symmetrical with respect to m_2 and, accordingly, it could be assumed that it is the same way compensated by its influence on the body m_2 by the secondary field g_2.

In reality the picture is significantly different if we consider the density of the field. In the next picture, the number of outgoing lines from m_1 is distributed evenly around the circumference, which visually demonstrates a significant difference in field density in areas #1 and #3.

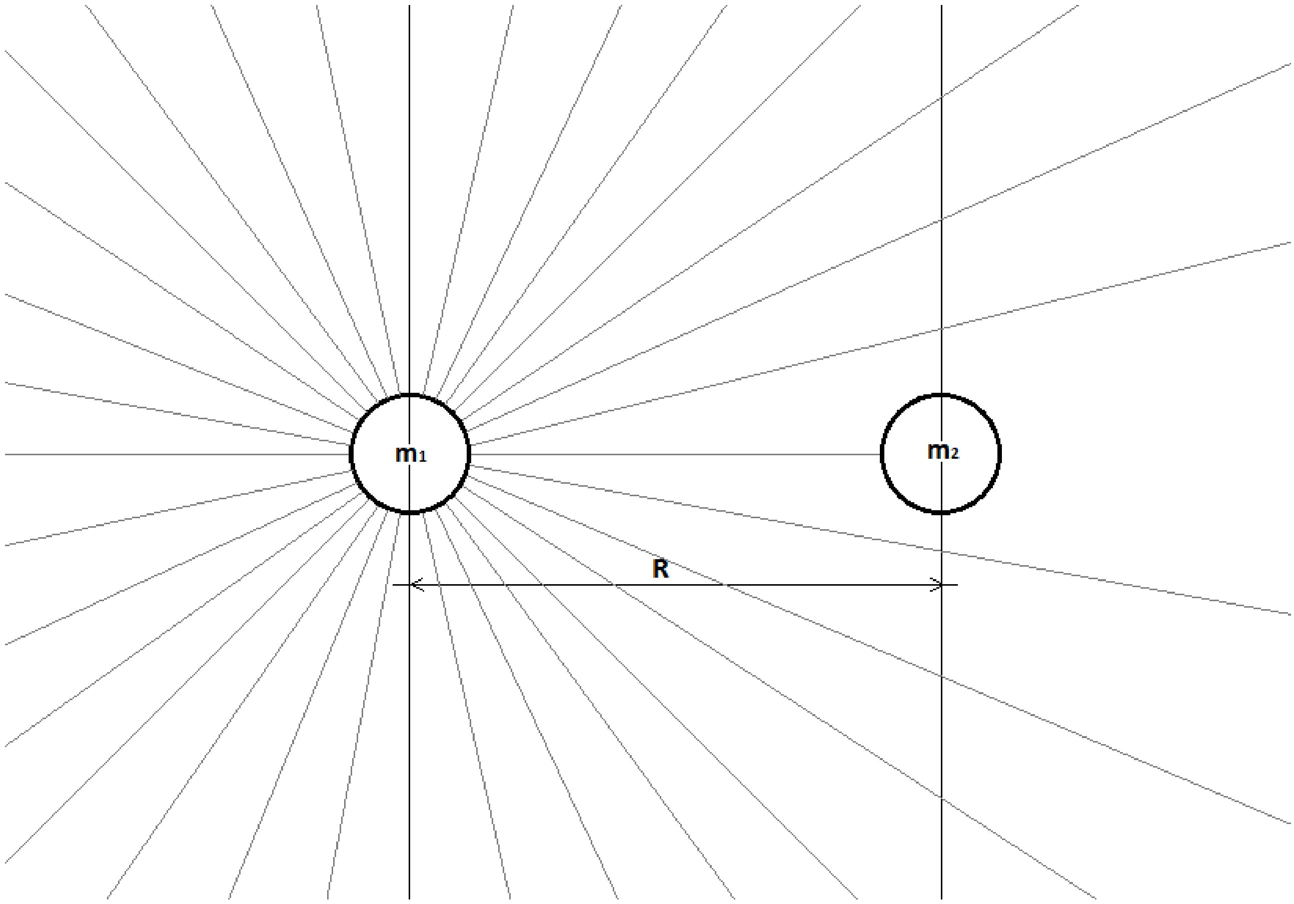

Figure 1.6-2.

In addition to the field density, it is also obvious that the directionality of the field is significantly different, which can potentially matter for its influence by the secondary field. Here this nuance is not analyzed because further goes decomposition from the area #1 of a sub-area similar to #3 in terms of density and field orientation relative to m_2.

To make areas #1 and #3 of the field more equal in density, from the left side relative m_1 a section of space with size R (equal to area #2) can be subtracted, breaking area #1 into areas #5 and #4.
#1 = #4 + #5

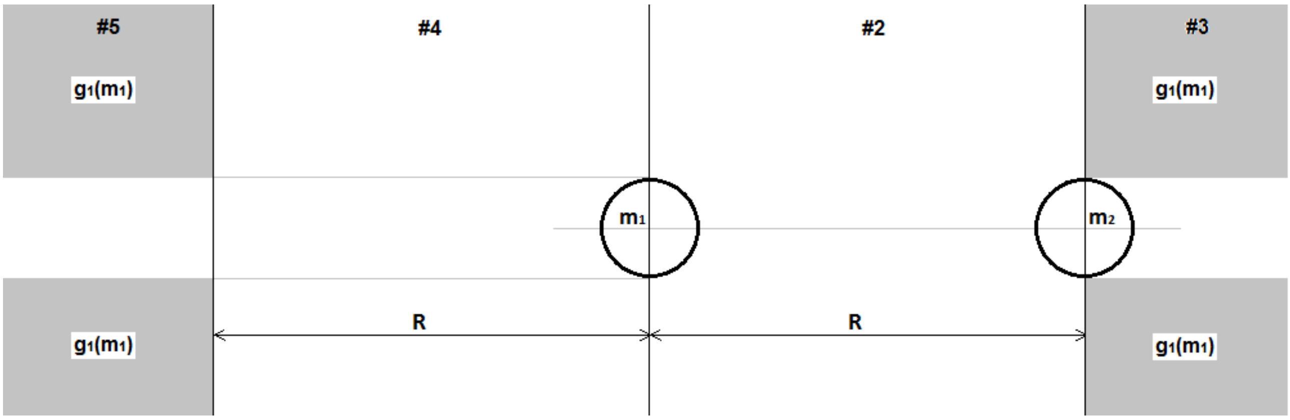

Figure 1.6-3.

The behavior of the field at a distance R from m_1 was considered in the previous section, but in this case there are two differences:

1. From the area #4 has to be subtracted the cylinder with the radius of the body m_1 and the height R, which is the space closed from m_2 and which does not affect it.
2. The speed V_{g1} in this case does not add up but is subtracted from the speed V_{g2}.

Insofar as:

(1) $V_{g1} << V_{g2}$

(2) The size of the specified cylinder with the radius of body m_1 is negligible compared to the size of a cylinder with a radius of infinity (= N_{g2}) which is whole space at the region #4, what also excludes the repulsion force made by the primary field,

then we take these differences here negligible and simply multiply the repulsive force (by the secondary field) found earlier by 2, where the dynamics of its change is the same, only symmetrical relative m_1.
It turned out in reality that decrease of this component of repulsion (and the corresponding increase in attraction) occurs twice as fast relative as was described when it is found, with the assumption that areas #5 and #3 are compensated by their influence on m_2.

Thus, the total force inside of #1 and # 3 is the repulsion of m_2 with a force (approximately) equal to that found earlier:

$F(g_2(m_1))@2$

Instead of multiplying by 2 the force found in the previous section, this one can be designated as:

$F(g_2(m_1))@4 \approx F(g_2(m_1))@2$

if the differences described here should be considered as significant.

But it was for bodies of the same size.

When size is different, the amount of field located in areas #1 and #3 is different.
Behind the large body there is less field affecting a smaller body, and behind the smaller one – more field, and, accordingly, areas #1 and #3 should be calculated separately, and the force $F(g_2(m_1))@4$ is no longer equal to $F(g_2(m_1))@2$.

In this figure, gray shows the field $g_1(m_1)$ which creates the field g_2 affecting m_2.

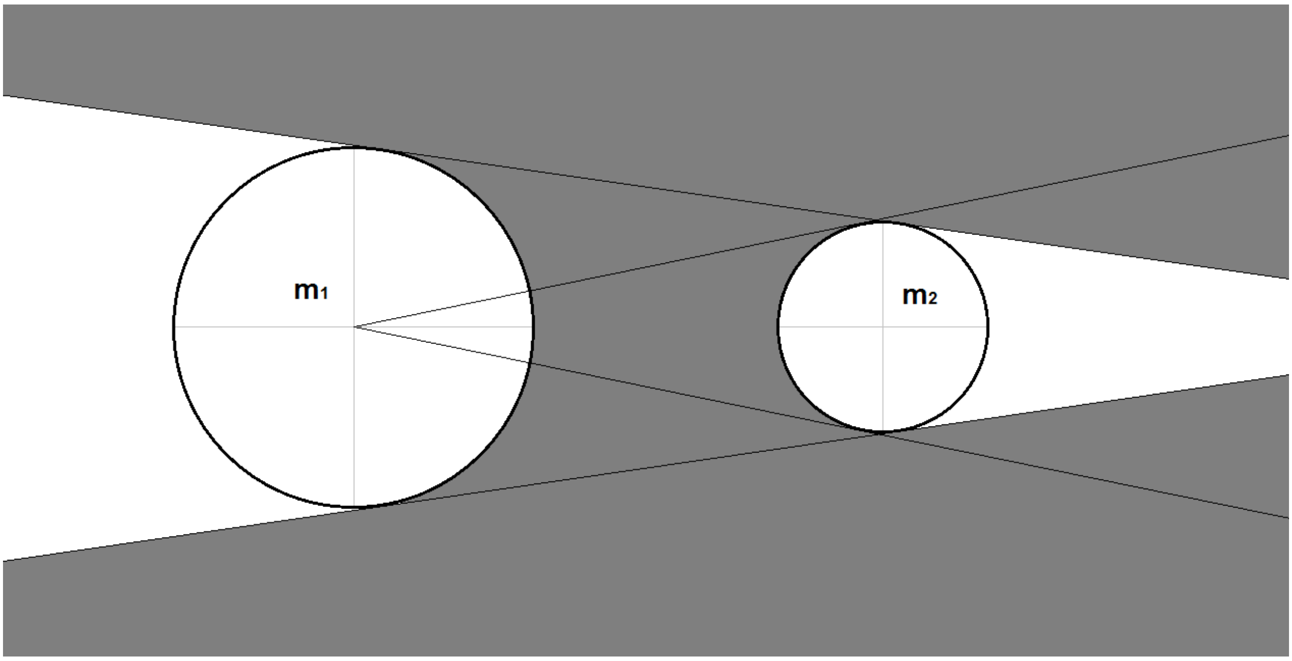

Figure 1.6-4.

If we consider the geometry of the radiation surface at the level of atoms (where the scheme with consideration of the upper layer of matter instead of single layer of atoms should give similar picture of the dependence of the outgoing field on the direction), then we can conclude that the emission of particles in directions other than 90 degrees is smaller than in the perpendicular direction to the surface due to interference from nearby atoms, and the farther from the angle of 90 degrees, the smaller amount of the field should go in that direction from the particular atom compared to the perpendicular direction.

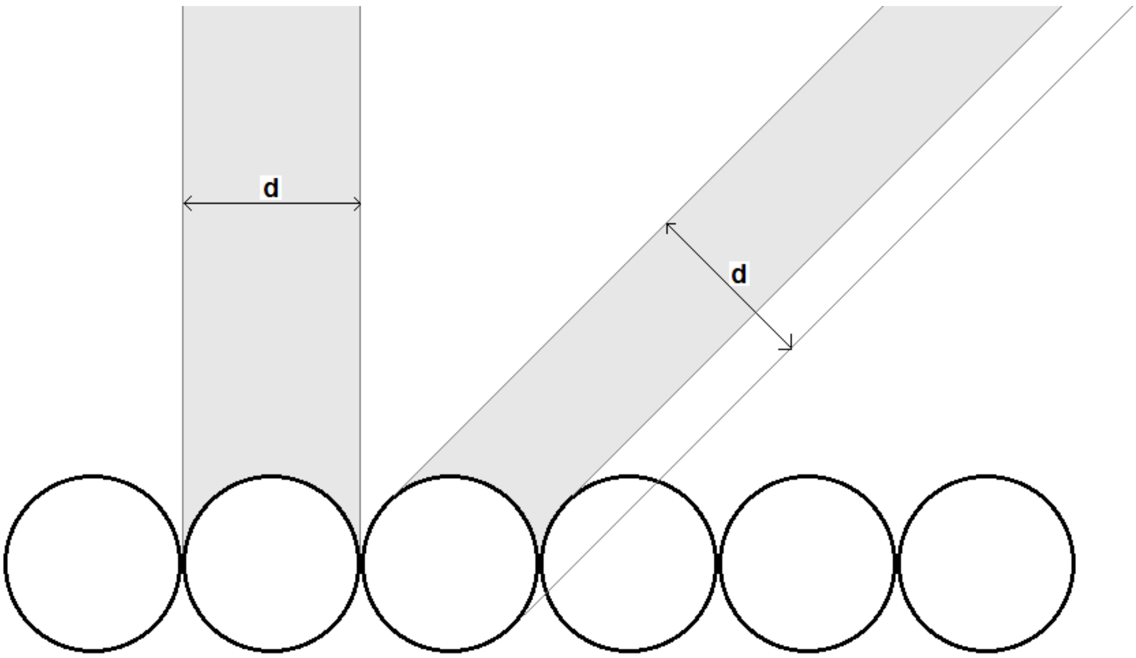

Figure 1.6-5.

Because of this the field density in the sector A'B' (created by the radiation surface AB) is smaller than on the straight line AA' (and higher above it, where the radiation comes from a perpendicular surface).

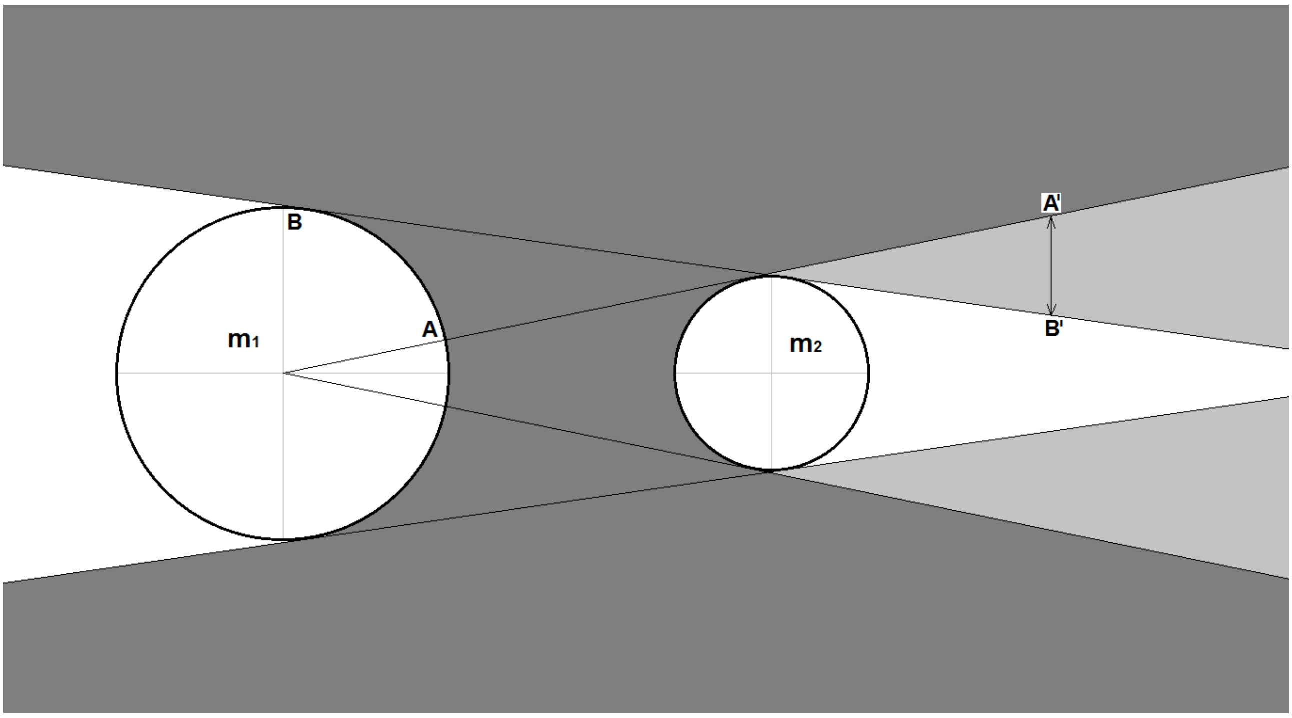

Figure 1.6-6.

The following figure schematically shows the decrease in the field density (caused by decrease in the radiation angle when moving from point A to point B).

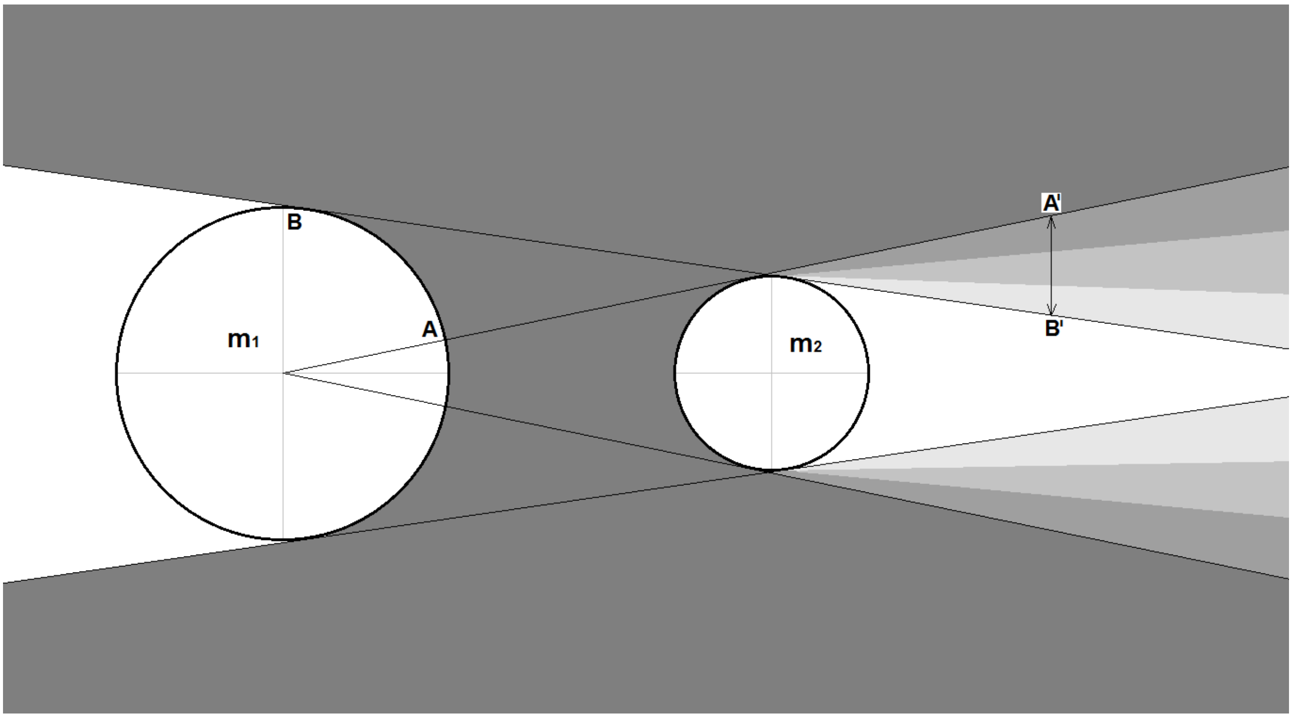

Figure 1.6-7.

By its influence, the field in the sector A'B' has the following peculiarity:

1. It performs work at a distance up to infinity, and accordingly it is not negligible (except when the angle A'B' is negligible).
2. The principle of operation is the same as that of the main component of the field when pushing itself – the body is pushed by the field into the area of uncompensated pressure (due to the fact that m_1 obstructs from m_2 the balancing part of this field (assuming the field volume between the bodies is negligible and was already calculated separately before)).

Thus it turned out that, despite the simplest basic principles of the mechanics of the field, the body can not only push itself to another body, but also attract another body to itself with its own field.

It is obvious that the change of the angle in the sector A'B' depends non-linearly on the change of the distance between the bodies and the pattern is such that the smaller the distance the greater the angle of the sector is, and, as a result, the force of attraction.

This is the main component of the mechanics of gravity which increases the force of attraction with decrease of the distance and, superimposed on the inverse square dependence of the main component of attraction, makes the law of attraction different from the inverse square form (for bodies with different size).

This explains the dynamics of change of forces in a systems like the Sun – Mercury (or the Sun – "any body smaller than the Sun" that is close enough to the Sun to make this component of attraction (or the dynamics of its change) significant).

Let's call this force with the index @3, since the body is pushed by the field from the area #3:

$F(g_2(m_1))@3$

Also becomes obvious insufficiency in the naming of forces because it is also necessary to indicate on which body the considered force acts, and not only by what field and which body the force is created, what could be denoted by index added immediately after F:

$F_2(g_2(m_1))@3$

One of the main conclusions here is the following:

the deviation of the field behavior from the inverse square law in the mechanics of attraction is determined almost entirely by the geometry of bodies and is not a basic property of matter and of the field emitted by it (assuming that for bodies with equal size, the sum of forces gives about this dependence, and also assuming that the density of the bodies under consideration is identical).

Also it is obvious that for the body m_1 a similar/symmetric force created by the m_2 will be repulsive, and not attracting.

In the general case it is also necessary to take into account the gravitational permeability of the objects (what should be presented only at the edges for large objects), which can create the attraction of another body with its own field even for bodies with the same size.

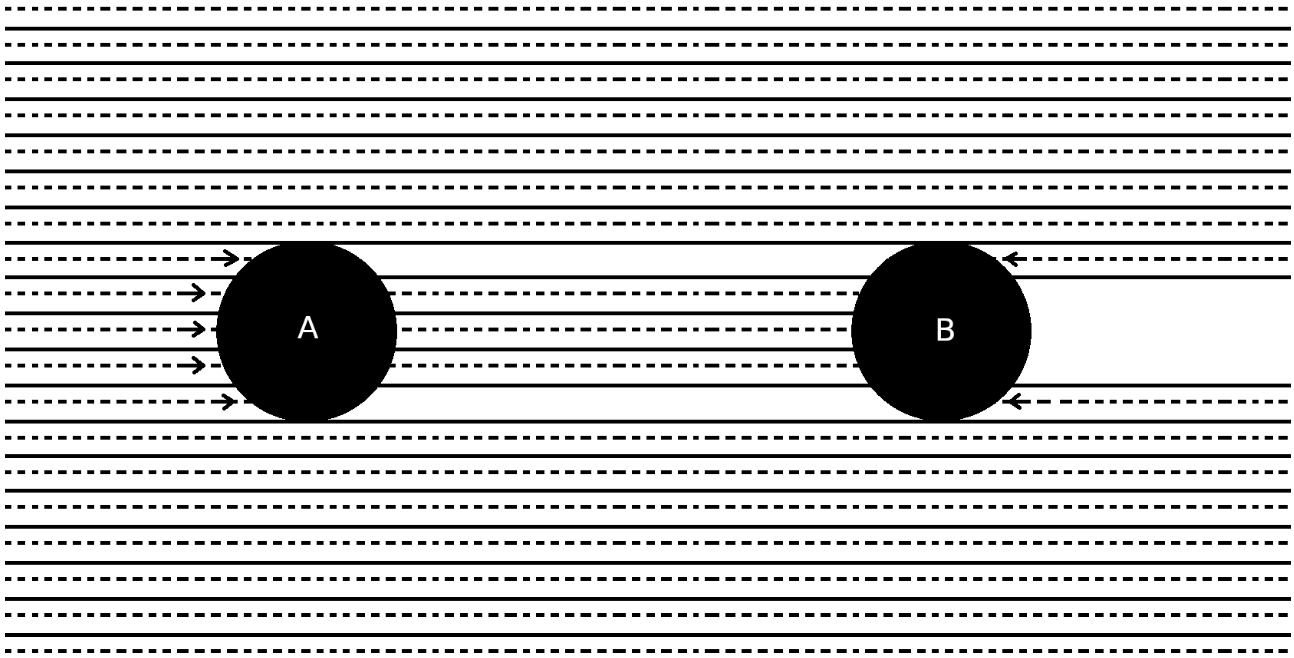

Figure 1.6-8.

In this diagram:

(1) straight lines indicate the presence of primary field particles,

(2) dashed – of the secondary.

1.7. Gravitational permeability.

The matter that we see around, in most cases consists of nucleons that are combined into atoms, then atoms are combined into molecules or crystal lattices (or exist as liquids and gases) and in such structures the maximum density of the substance (nucleons) that interacts most strongly with the gravitational field is extremely rarefied, and, accordingly, the particles of the gravitational field can easily pass some distance before they collide with the nucleus and give it their momentum.

The particles of the gravitational field g_1 and g_2 have a fundamentally different structure and differ in the way they interact with the material when pass through it.

For secondary particles of the field, which are the simplest particles or the simplest systems of particles acting as a single particle, the permeability of a substance determined pretty is simply – this is the projection of all impermeable particles of a material onto an area perpendicular to the field movement.
Since the probability of completely filling such a plane with impermeable particles is large even for bodies of not very large sizes, we can say that only small objects have a large g_2 permeability, and objects of large size are almost completely impermeable.

Primary particles of the field g_1 are particles with their own (repulsive) field, and, when approaching nucleons and interacting through repulsive field, they can change the trajectory of motion, and thus the g_2 flux can become more chaotic inside the material, but it persists as a flux with directional motion, and, when g_1 particles come out of the body from the other side, they take back their momentum (when repulsing from the atoms), which was partially transmitted to the body during internal collisions.

One of the main criteria that should affect g_2 permeability is an increase in the density of g_2 and g_1 particles inside the body, both from self-radiation and when filled with an external field, which

makes such environment less permeable due to an increase in the probability of collisions with particles of the field.
Thus, a medium size body can have small g_2 permeability, and at the same time large g_1 permeability.

In the following figure, the horizontal thickness of the permeable level is maintained the same throughout the height, and it is visually obvious that only the outermost edges remain permeable, from which it can be concluded that even with very significant permeability of the material, this can have negligible effect on the absorption area of the field by the body, which in this case is almost equal to the entire cross-section area.

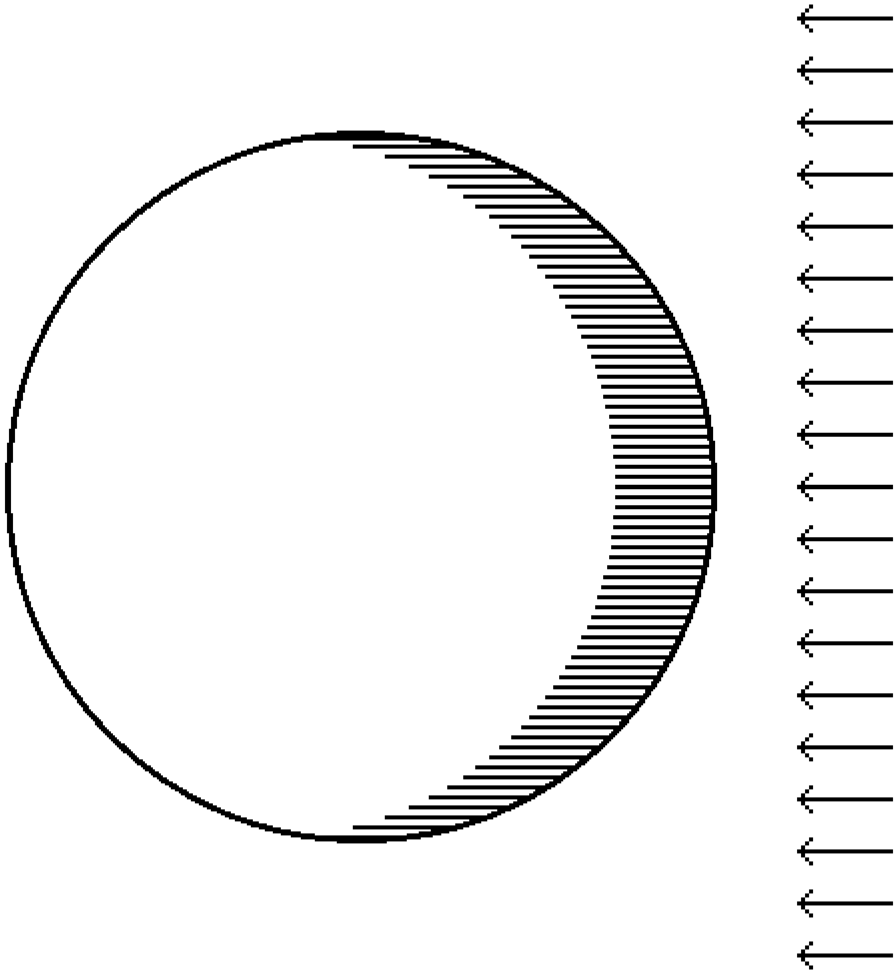

Figure 1.7-1.

Gravitational permeability can have a significant effect on the mechanics of gravity in many ways. First, the permeability works not only at the input, but also at the output, which determines the density/strength of the field emitted from the surface.
When deriving the simplest formulas, radiation can be considered as occurring from the outermost layer, but to determine the exact field parameters or when is required to derive more precise formulas, then it is necessary to know the gravitational permeability, since further, for instance to find characteristics of emission by single atom, it is necessary to divide the radiation by the number of atoms in the radiating layer (what is further complicated by irregular distribution of density of the field inside large bodies).

From the point of view of the previously considered forces of the gravitational field, the level of permeability can significantly change some of them.

For large objects like planets and their satellites, this does not change much since they must be almost completely impermeable, but such objects as comets and smaller ones must have a large permeability, which immediately affects several previously considered forces:

1. Repulsion by the own field g_1 decreases as part of the particles simply pass through the body without pushing it.
2. Attraction by own g_2 field increases because the particles g_1 pass through the body and fill the area behind it to a greater degree than only with consideration of the geometry (when the field gets behind the other body because of its smaller size).

The item 2 above for such objects most likely can be considered as negligible, because the empty area behind such a small body should be small initially and negligible in the amount of generated forces, where this geometrically closed area for small bodies also becomes filled with field to some extent due to the diffraction effect of the field into a closed area, which should have negligible effect for planets, but for small objects a narrow empty space behind the object should quickly fill up due to field diffraction (even for impermeable bodies).

At the same time, the main component that can affect the ("non-standard") attraction dynamics of such objects is repulsion of comets with own field, which is weakly expressed here and, accordingly, there is no increasing repulsive component with decrease of distance due to an increase in the absorption area of the field as it is for planets, and therefore, such objects should accelerate near the Sun significantly faster than the planets.

It should also be noted that when calculating the motion of comets (and other space objects) using Newtonian formulas (and others that do not take into account even the main significant forces and parameters of the mechanics of gravity), the wrong mass and/or density will be attributed to them.

1.8. Gravitational tunnel.

Interacting bodies create regions/tunnels in space with modified density and composition of the field.
Obviously this can affect other bodies if they get into such tunnel.

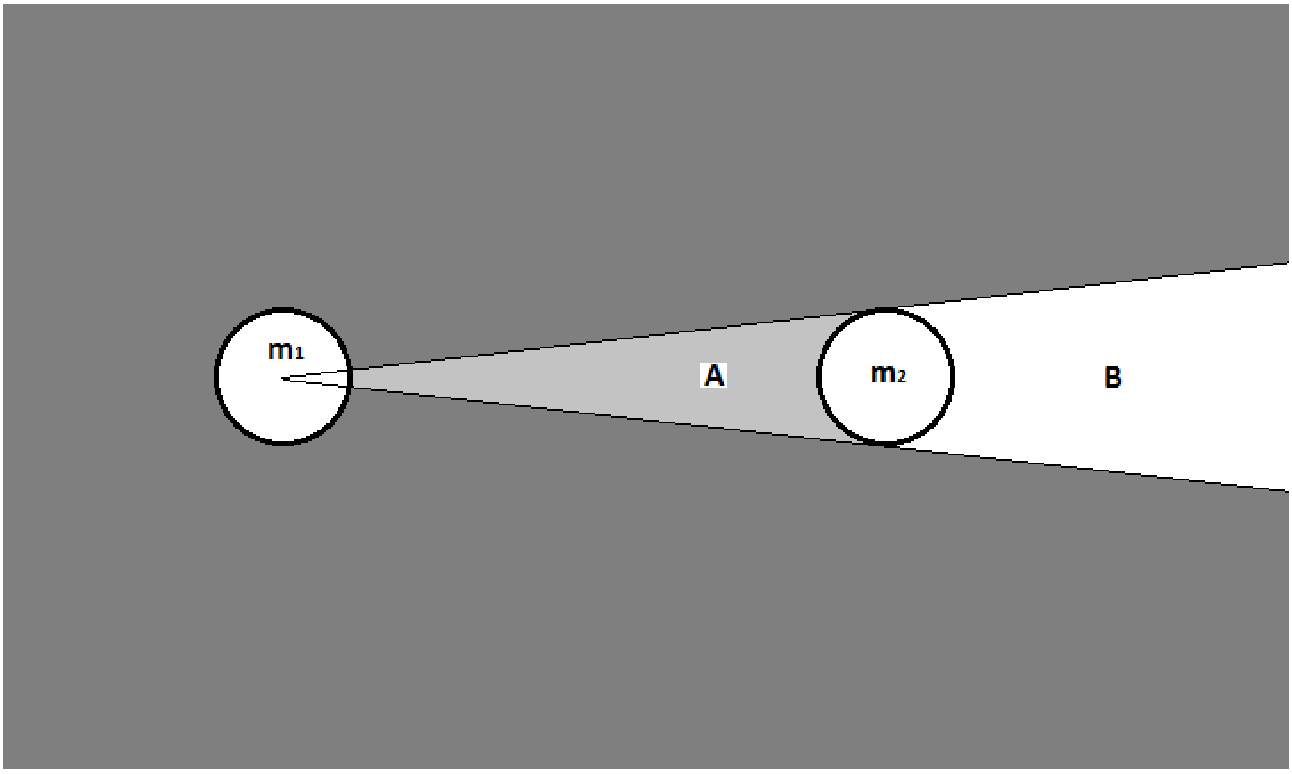

Figure 1.8-1.

This should be especially expressed for bodies with significant gravitational permeability (like comets) because before entering the tunnel the $g_1(m_1)$ field could relatively freely pass through them and create the reverse g_2 flow, and after entering the tunnel this component disappears due to the impermeability of m_2, and the main remaining force is the pushing flow, which, despite its negligibility due to high permeability, in this case can become a significantly expressed force.
An interesting fact is that when passing through any of the areas (A or B in the figure) they lose attraction (or a substantial part of it) from the body m_1 due to the fact that in these areas there is no (expressed) returning g_2 flow (which creates a pushing pressure).

For planets (= gravitationally impenetrable bodies), the dynamics of mutual influence when building and passing a tunnel should be more complex.

In the region A, there is expressed (relative to the other forces of the field of m_1) repulsive part by the field g_1, and in the region B both components of the field of m_1 are minimal and the connection with m_1 through the field of m_1 is least expressed.

2. Oscillation damping inside of field.

Let's consider one of the main properties of the gravitational field, which is damping of oscillations of a body located in an external gravitational field.

Each object radiates a primary field at a speed V_{g1}, and also in most cases the bodies move relative to each other.
The velocity V_f indicated in the figure is the sum of the velocity of the source and the field.
In these examples we will take

(1) the source of the external field as stationary, and then the velocity V_f is equal to the velocity of the field g_1 ($V_f = V_{g1}$), and accordingly the velocity of particles g_2 is added to the velocity of particles g_1,

(2) bodies gravitationally impenetrable.

2.1. The direction of the body and the field are the same (or there is a non-zero velocity projection onto this axis).

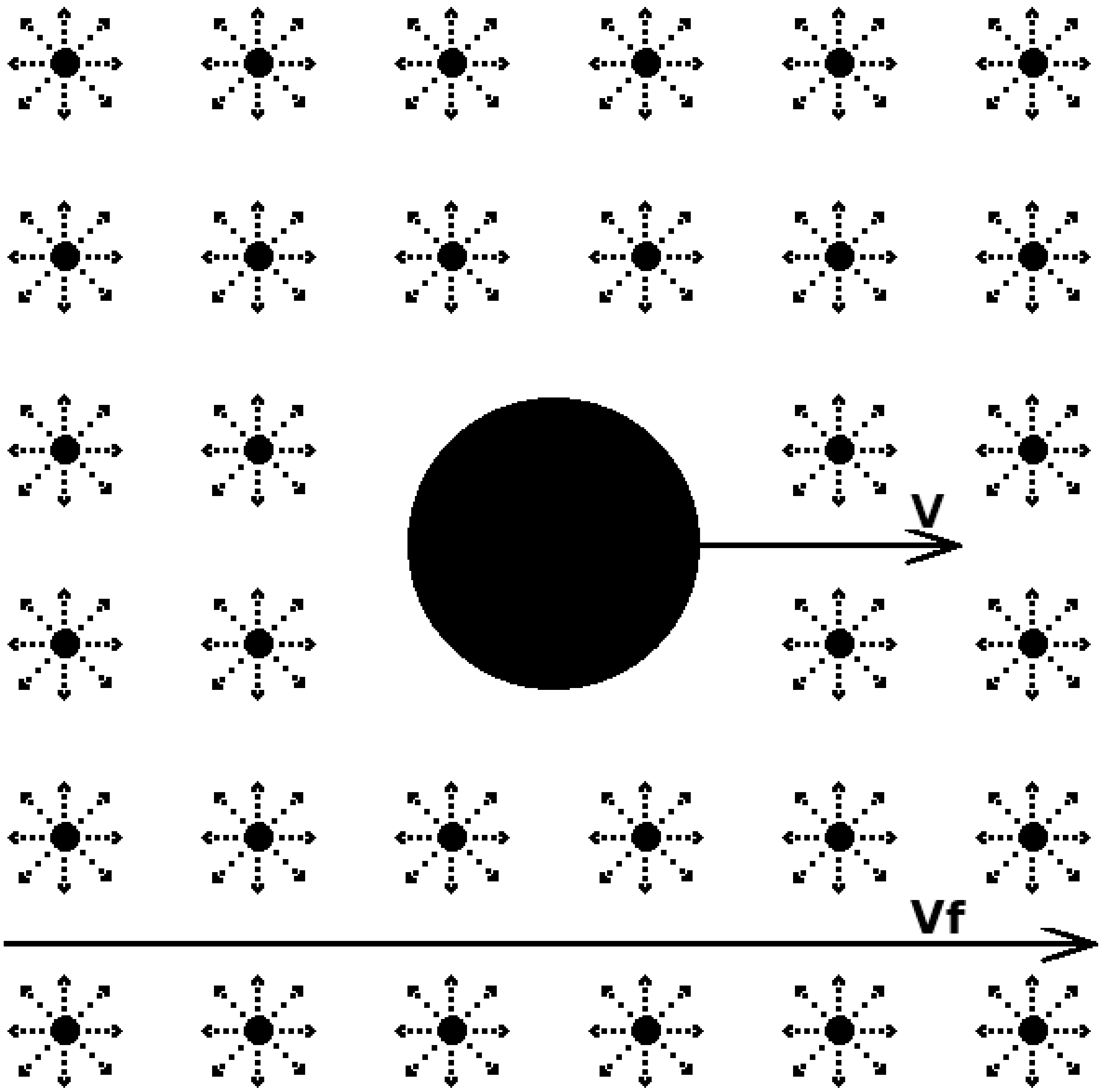

Figure 2-1.

The momentum transmitted by the field based the velocity of the particles of the field relative to the body:

1. Particles that transmit momentum in the direction of body movement (in the picture: from left to right):

$$P_1 = \sum m_{g1}(V_{g1} - V) + \sum m_{g2}(V_{g1} + V_{g2} - V) \quad (2.1)$$

2. Particles that transmit momentum against the direction of body movement (in the picture: from right to left):

$$P_2 = \sum m_{g2}(V_{g1} - V_{g2} + V) \quad (2.2)$$

Particles g_1 do not transfer momentum in this case.

2.2. The direction of the body and the field are opposite (or there is a non-zero velocity projection on this axis).

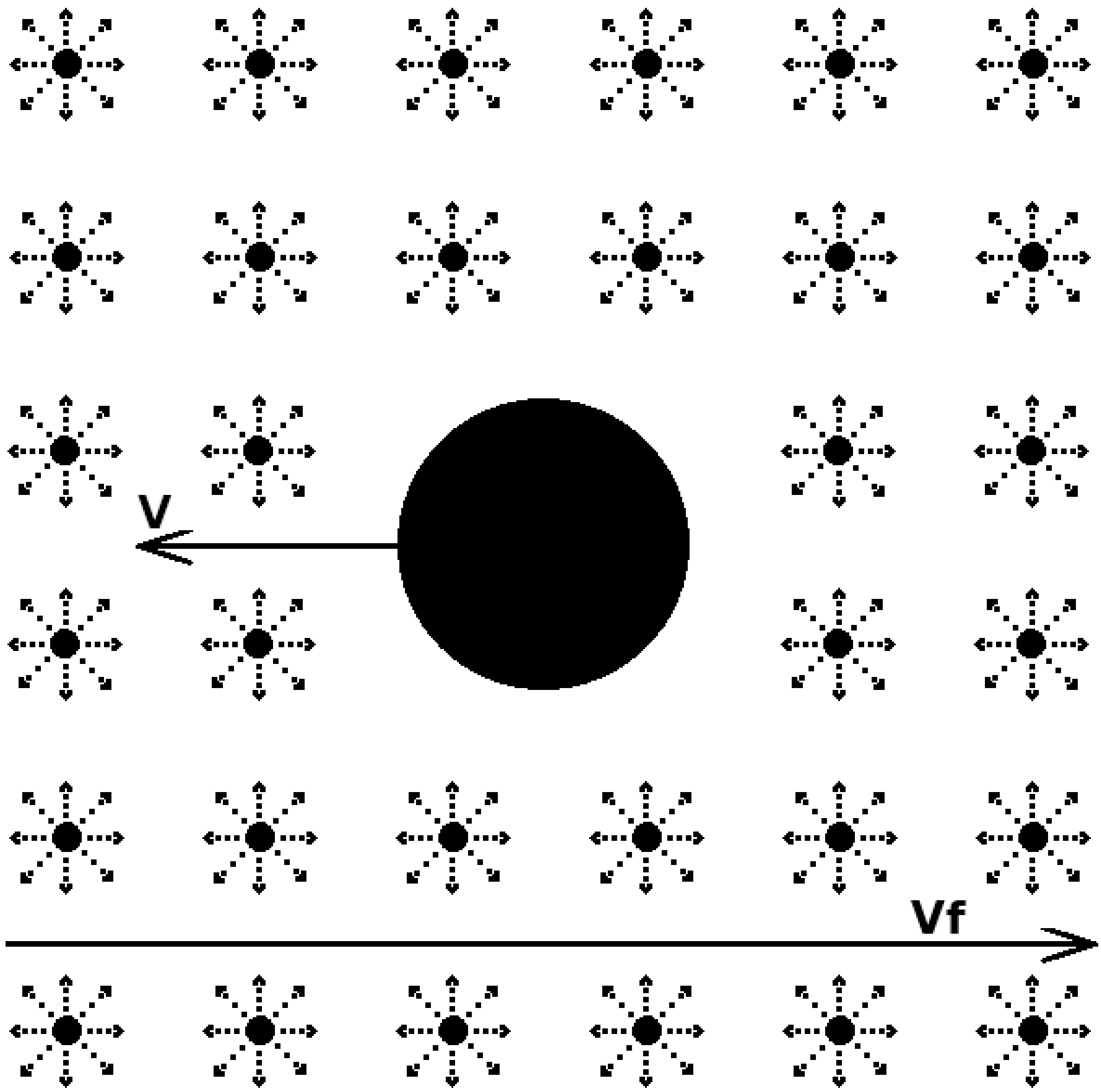

Figure 2-2.

The momentum transmitted by the field based the velocity of the particles of the field relative to the body:

1. Particles that transmit momentum against the direction of body movement (from left to right):

$$P_1=\sum m_{g1}(V_{g1}+V)+\sum m_{g2}(V_{g1}+V_{g2}+V) \quad (2.3)$$

2. Particles that transmit momentum against the direction of body movement (from right to left):

$$P_2=\sum m_{g2}(V_{g1}-V_{g2}-V) \quad (2.4)$$

Particles g_1 do not transfer momentum in this case.

2.3. Total momentum change during oscillation.

The total momentum transmitted (according to the considered pictures) from left to right ((2.1) + (2.3)) for the full oscillation period:

$$P_{13}=\sum m_{g1}(V_{g1}-V)+\sum m_{g2}(V_{g1}+V_{g2}-V)+\sum m_{g1}(V_{g1}+V)+\sum m_{g2}(V_{g1}+V_{g2}+V)$$

$$P_{13}=2\sum m_{g2}V_{g1}-2\sum m_{g2}V_{g2}$$

The total momentum transmitted (according to the considered pictures) from right to left ((2.2) + (2.4)) for the full oscillation period:

$$P_{24}=\sum m_{g2}(V_{g1}-V_{g2}+V)+\sum m_{g2}(V_{g1}-V_{g2}-V)$$

Change of momentum during the full oscillation period:

$$\Delta P=P_{13}-P_{24}=2\sum m_{g1}V_{g1}+4\sum m_{g2}V_{g1} \quad (2.5)$$

Taking into consideration that $m_{g1}\gg m_{g2}$ the summand $4\sum m_{g2}V_{g1}$ could be ignored and it could be written down as:
$\Delta P\approx 2\sum m_{g1}V_{g1}$, but this is only for the gravitationally impermeable body.
In the case, for example, of a comet which (1) should have g_1 permeability much higher than g_2, and (2) performs very long journeys along ellipses, the total influence of the component $4\sum m_{g2}V_{g1}$ potentially could be higher than that of the g_1 part of the field.

In fact, the process of damping of oscillations and the conclusions were obvious without the formulas:

1. When moving along a field, the body loses a part of the accelerating momentum due to the similarity of the directions of motion.
2. When moving against a field, the body receives an additional breaking momentum due to the opposite direction of movement.

Obviously, if orbit of a planet/comet has a vertical component of motion relative the external field (as in the case with elliptic orbit), then vertical oscillations gradually decay, which is the reason for the transfer of potential energy into kinetic (= acceleration of planets or their satellites) with the transformation of an elliptical orbit into a circular one, which obviously should be the cause of such "phenomena" as the "secular acceleration of the Moon" or acceleration of comets.

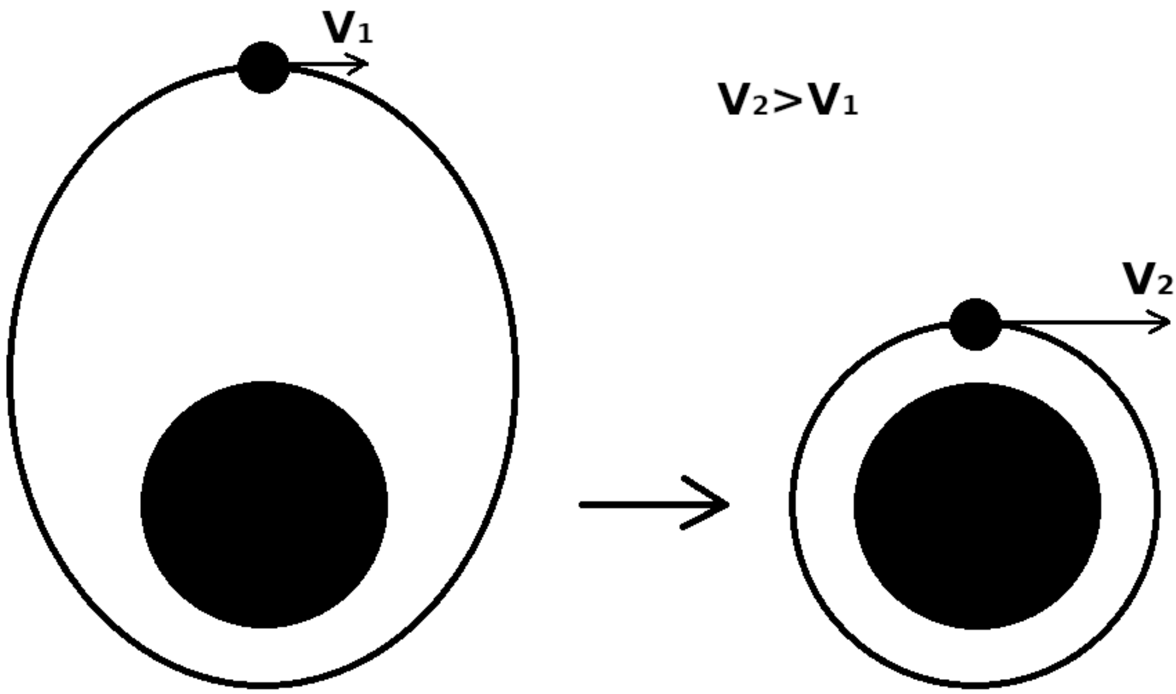

Figure 2-3.

2.4. The direction of the body and the field perpendicular.

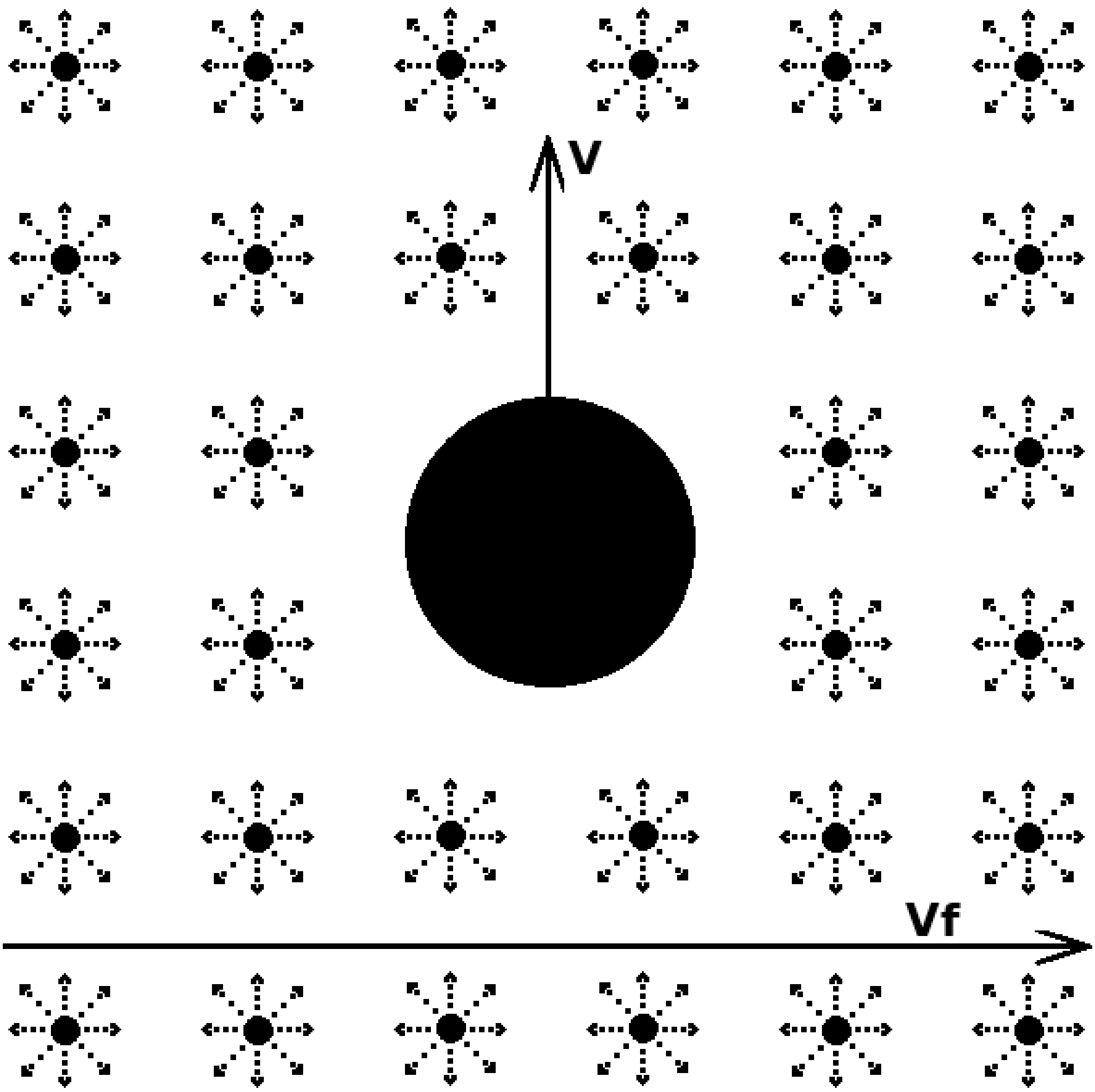

Figure 2-4.

This case is equivalent to the case with the body moving relative to the field which does not have speed:

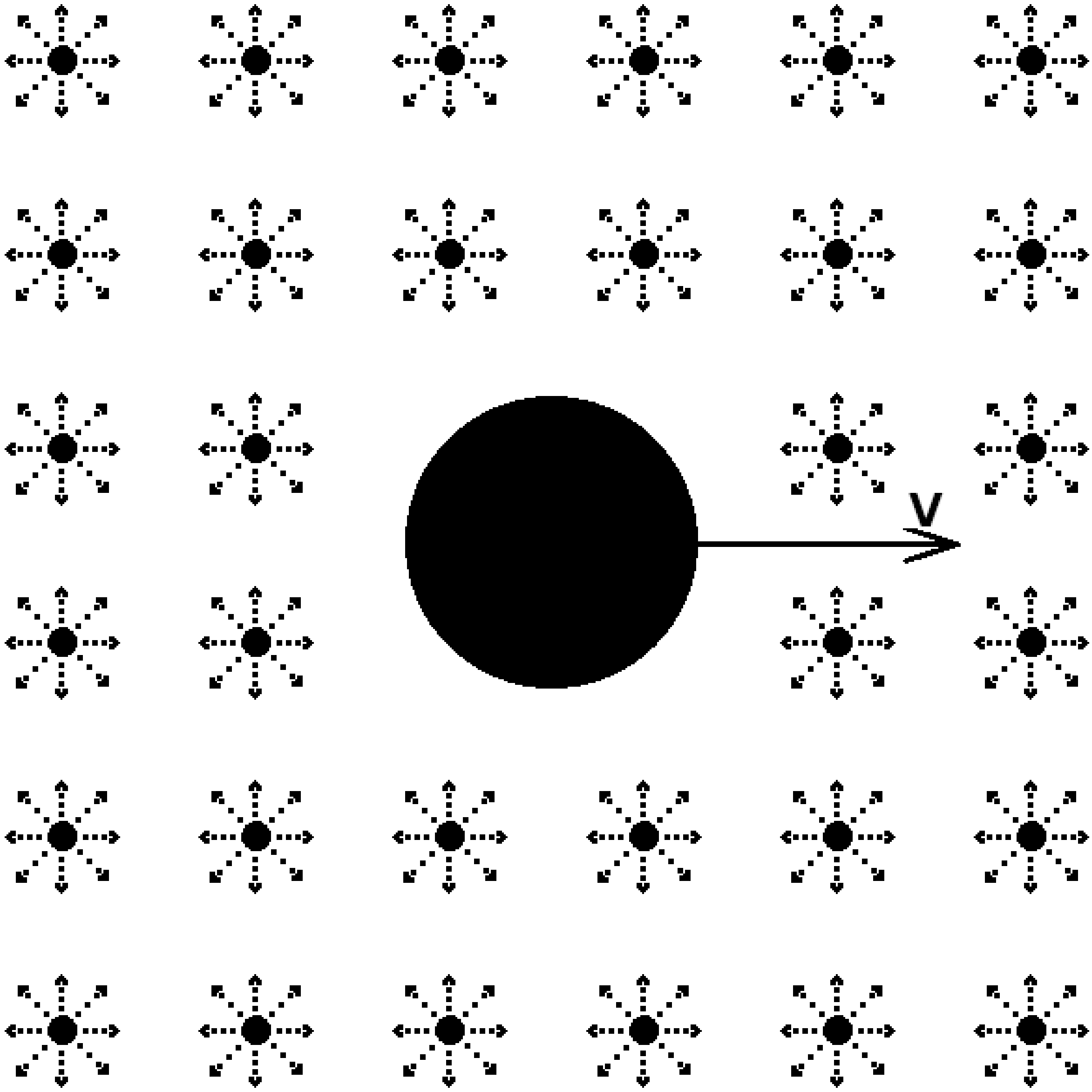

Figure 2-5.

The momentum of particles of the field transmitted to the body:

1. Particles that transmit (accelerating) momentum from behind:

$$P_1 = \sum m_{g2}(V_{g2} - V)$$

   Particles g_1 in this case do not transfer momentum.

2. Particles that transmit (braking) momentum from the front:

$$P_2 = \sum m_{g1} V + \sum m_{g2}(V_{g2} + V)$$

Total breaking momentum:

$$\Delta P = P_1 - P_2 = \sum m_{g2}(V_{g2} - V) - \sum m_{g1} V - \sum m_{g2}(V_{g2} + V)$$

$$\Delta P = -\sum m_{g1} V - 2\sum m_{g2} V \quad (2.6)$$

With such way of movement, the body loses part of the momentum of the secondary particles from behind and receives an additional momentum coming from the front, so it is accounted by the formula twice, but, nevertheless, according to $m_{g1} \gg m_{g2}$, for a gravitationally impermeable bodies this item is negligible.

2.5. Conclusions:

1. Let's compare the loss of momentum during oscillatory motion along the field to the loss during motion in the perpendicular direction:

(2.5) $\Delta P = P_{13} - P_{24} = 2 \sum m_{g1} V_{g1} + 4 \sum m_{g2} V_{g1}$ – oscillatory motion along the direction of the field.

(2.6) $\Delta P = -\sum m_{g1} V - 2 \sum m_{g2} V$ – motion in the perpendicular direction relative the direction of the field.

From the relation $V \ll V_{g1} \ll V_{g2}$ it follows that when moving in the direction perpendicular to the field, the deceleration by the field can be considered as negligible, especially taking into consideration that the Moon gets minimally visible acceleration during 100 years, what, based on the relation of speed of particles of the field and of bodies, gives extremely small value for deceleration by the field when moving in the perpendicular direction.

But all this was considered for the influence of the external field.

2. The influence of own field on the body.

The peculiarity here is that for large space objects (like planets or the Moon) there is extremely high density (and, accordingly, mass) of the field inside of the object, which can make the influence of momentum with dependencies in the form (2.6) not only not negligible, but very significant.

An example of such a process is the deceleration of axial rotation by own internal field (which must be taken into account when considering the rotation of the Moon).
On average at the exact point of time all the internal own field (emitted at that point of time) can be considered as having no speed relative to the body, but since the body continues axial rotation by inertia and the field moves relative to space (with the speed and direction it had at the previous moment before the body shifted along the axis of rotation), then in this case already has to be considered interaction of the body with own internal field because the direction of motion of the body and of the field (emitted at the previous moments of time) do not coincide anymore.
With large mass of the field this should create a significant breaking effect/momentum.

With rectilinear motion (without rotational around own axis), the entire field mass moves together with the body (where each particle of the field receives a sum of velocities of radiation and of the radiating body) and, accordingly, it does not have a braking effect on the body, in contrast to the external field.

3. Axial rotation of the Moon.

One of the first of the "mysteries" that can be observed in the sky is the axial rotation of the Moon. The "problem" is that the axis of rotation is perfectly aligned with the Earth, where the axis of rotation is rotated by 90 degrees relative to the Earth, which also makes ideally aligned the plane with which the Moon is turned towards the Earth.
Similar patterns can be observed in the solar system for other planets and their satellites with the difference that their axial rotation period is different.

On the one hand, it could be assumed that when the Moon was captured by the Earth, the axis of rotation fell randomly into this position.
But:

(1) the probability of such an event is extremely minimal, and
(2) the presence of similar patterns for other planets with satellites

makes the probability of such coincidences negligible, and, as a result, this effect is a stable regularity.

It is obvious that there are forces that:

1. Create axial rotation.
2. Keep the rotation constant.
3. Perfectly align the axis of rotation.

3.1. Creation of rotational motion by a gravitational field (for bodies having a perpendicular component of the motion relative to the motion of a field).

Let's consider the behavior of an object and the field in the presence of a perpendicular component in the movement of the body relative to the direction of movement of the field.

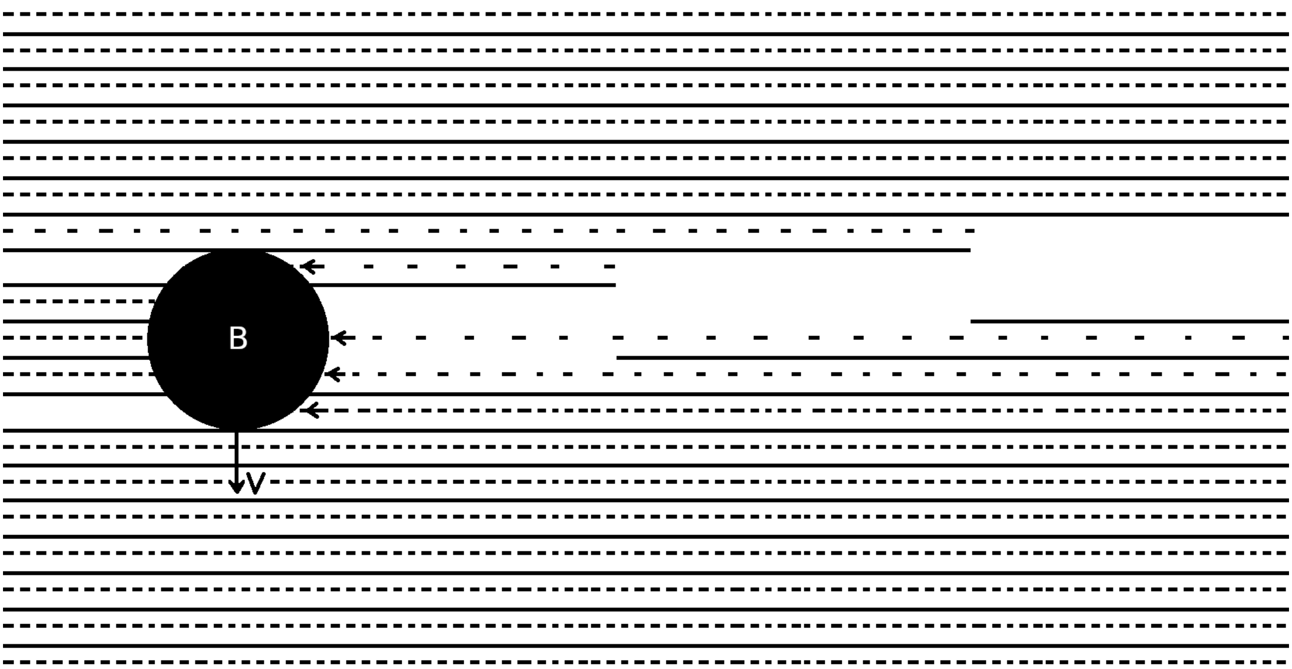

Figure 3-1.

At this scheme:

straight lines	indicate the presence of the primary field particles in the space.
dotted lines	indicate the presence of the secondary field particles in the space.

This field is created by an external object which is on the left, and the directionality of the lines roughly coincides with the direction of the field movement.

As can be seen from the diagram, when the body is displaced downwards, the field on the right side shifts upward relative to the body.
Filling the specified space with with shifted field creates a reverse flow of the secondary particles there, which attracts the body B back to the emitting body (at the scheme: to the left).
Since this flow is not symmetrical in the lower and upper parts of the body B, this creates a rotating force from below.
In addition, creating a void at the upper side reduces the force of attraction on that side, what increases the rotational force.

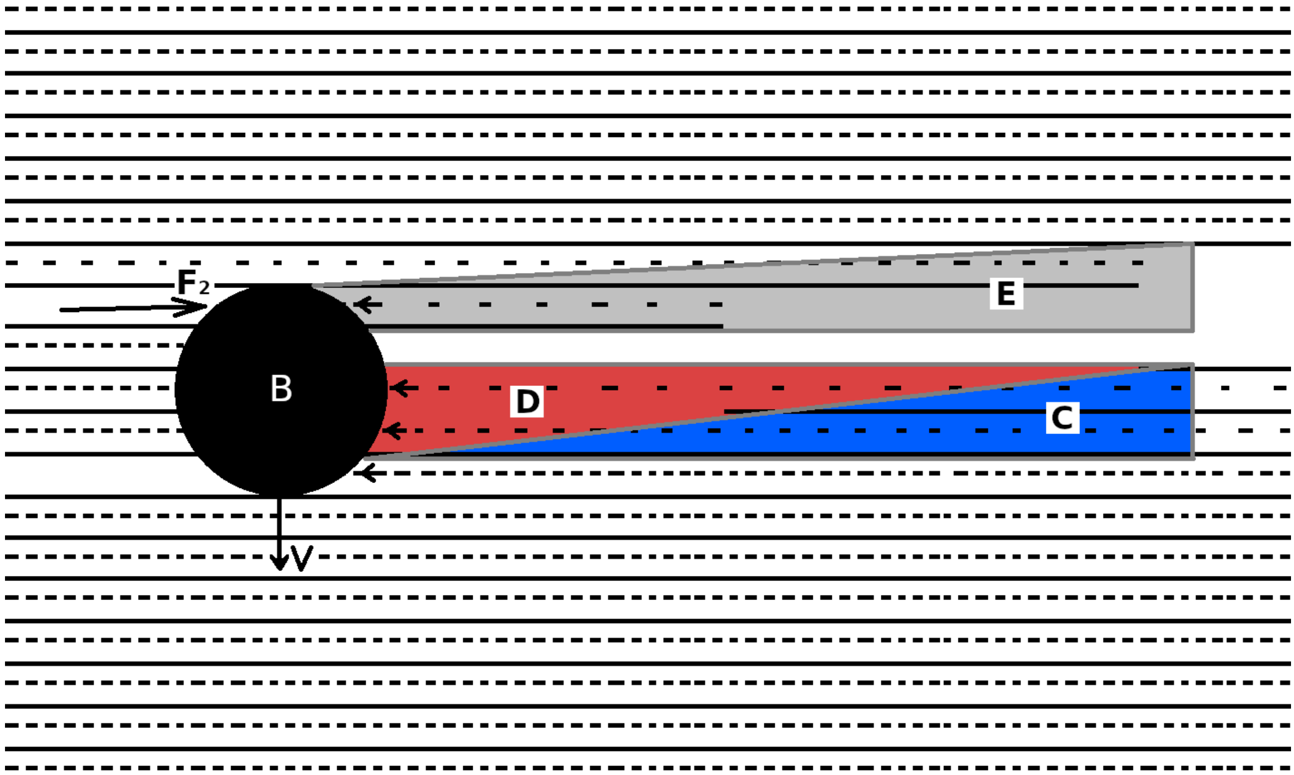

Figure 3-2.

Designations on the diagram:

C	the region containing the additionally obtained primary field (in the obstructed space) from the emitting body.
D	the secondary field created by an additionally received primary field at the area C.
E	the area of the lost field (of the emitting body) relative to the state with no perpendicular movement.
F_2	additional rotational force, besides the pressure by the secondary field in the region D.

In this case, the body is considered as g_2 gravitationally permeable at the edges, and therefore there is an indent from the edge at the bottom side, and shift of the field at the top starts not from the edge.
In the case of a completely gravitationally impenetrable body, F_2 will be almost completely absent.

The main problem at the beginning of the analysis of this process is that the force affecting the object and creating axial rotation must constantly increase the speed of rotation.

In reality, discussed earlier deceleration by the field creates a reverse braking force and a constant increase in speed does not occur.
The greater the rotational force and the subsequent increase in speed, the stronger is the reverse braking momentum of the field (which depends on speed), and accordingly, regardless of the rotational force, at some point it is balanced by the braking force and the body rotates at a constant speed.

3.2. Alternative theories.

In accordance with modern views, the rotational (and breaking) influence on the Moon is made by tidal forces created by the movement of masses of water on the surface of the Earth.
Without delving into the essence of those processes, let's consider only the critical nuances that show incorrectness of such descriptions.

The basic fact is the following:
the presence of the continents makes this influence extremely uneven.

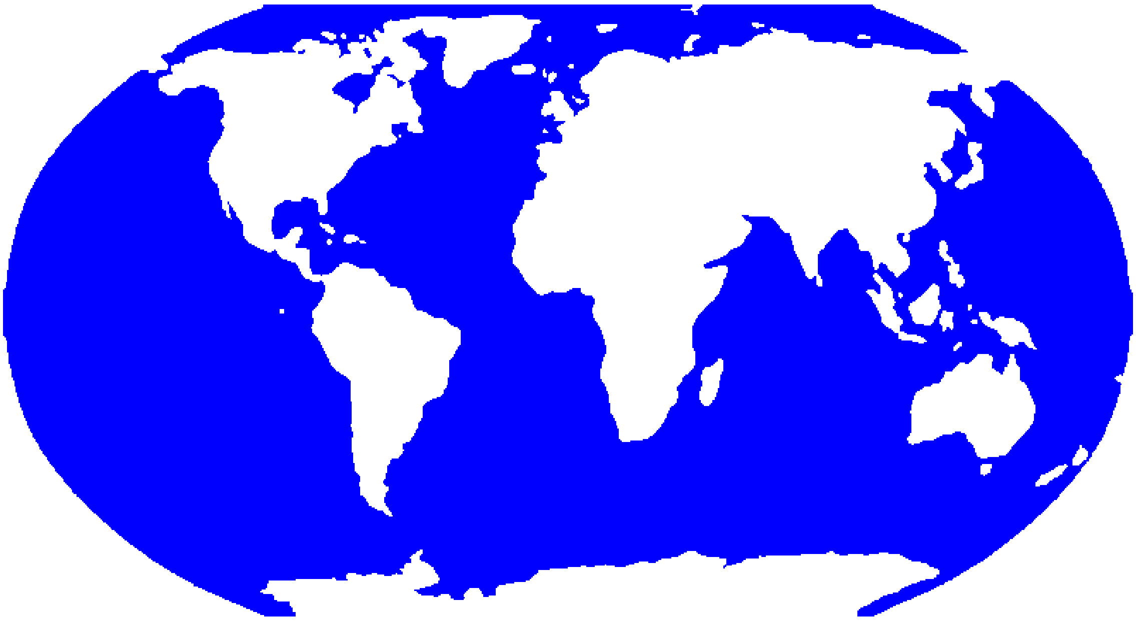

Figure 3-3.

If the influence of the mass of water would be the cause, then the uneven distribution and movement of water would correspond to the uneven movement of the Moon.
In reality, the influence of the Earth on the rotational motion of the Moon is extremely uniform, and, accordingly, the influence of water cannot be the cause of such a uniform axial rotation of the Moon.

Also could be considered the level of required forces for the rotation of the Moon, and then this value (its increase) has to be recalculated for the surface of the Earth, based on inverse square decay of force at the distance to the Moon, what probably should make such attempts of description not solvable by premise (with consideration only relative the change of mass of water at different parts of the surface).

4. Formation of objects.

Let’s consider the evolution of a star, which in many cases ends with explosion followed by the formation of large objects from tiny particles and such a process can be cyclical.

Cosmic bodies attract other objects that fall on their surface, and their mass and size increases. With an increase in mass and size, the probability that the particles of the field inside the body fly out of it decreases. The larger the size and the closer to the center, the smaller the probability of flying out.

Increase of the field density towards the center increases the repulsive force of the field from inside the body for both field components, by the primary and the secondary particles.

The internal increased density interferes with directional passing of the field, what "dissolves" the structure of matter as the atoms do not have the ability to attract other atoms due to the fact that the high density of (matter and) the field in space prevents this.

Thus, with the advance to the center of a large object, complex structures dissolve into smaller ones. First, chemical and crystalline bonds disintegrate, then complex atoms decompose into more simple and then to hydrogen, and, most likely, in stars, the process continues further with the dissolution of complex structures into simpler ones where nucleons can break up into simpler particles.

Those particles of the field that scatter from the surface create an attraction that squeezes this sphere and thus restrain the disintegration of the body due to the pressure from within.

The scheme of formation of a solid object from a cloud of particles due to the forces of attraction:

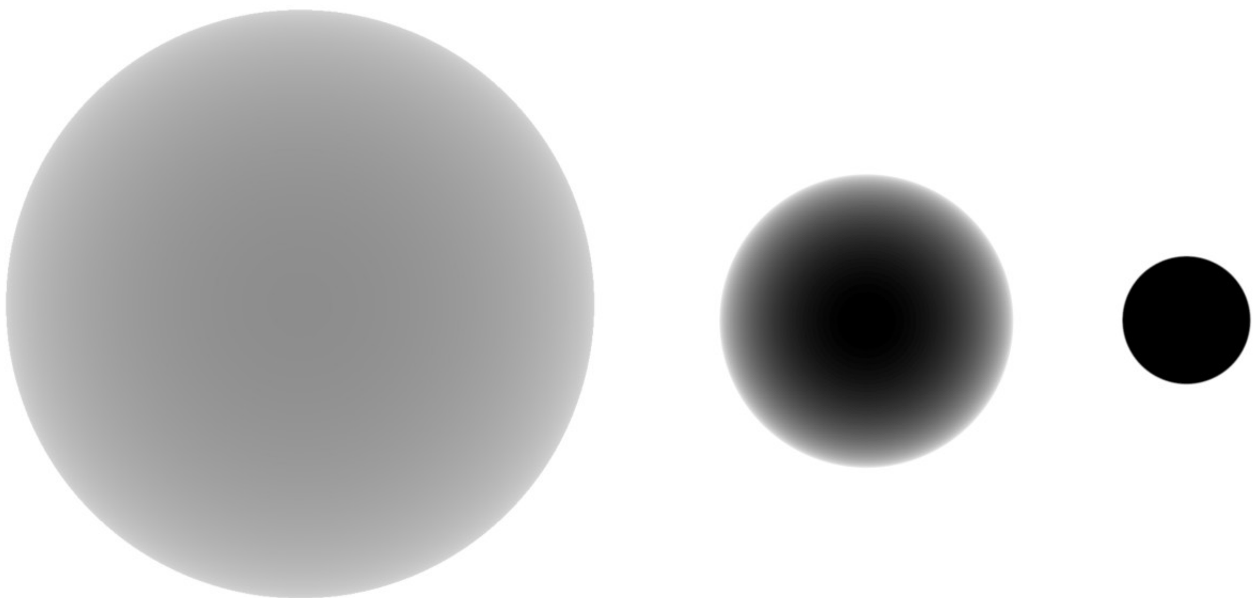

Figure 4-1.

The figure below shows a diagram of the state of two space objects:

(1) planets (like Earth) with a solid outer part and a liquid inner part, and
(2) completely liquid body like a star,

where black indicates solid crystalline matter, and gray means liquids and more rarefied states of matter.

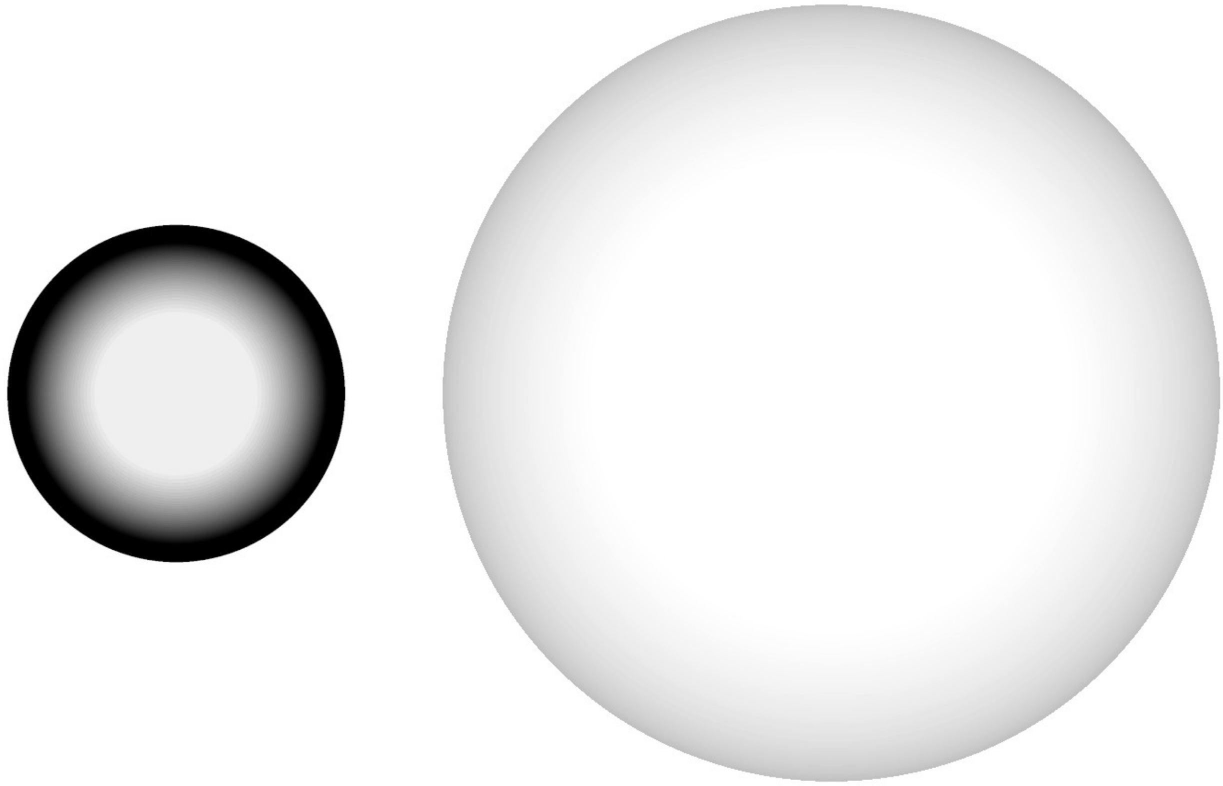

Figure 4-2.

Diagram showing the internal and external pressure of the star:

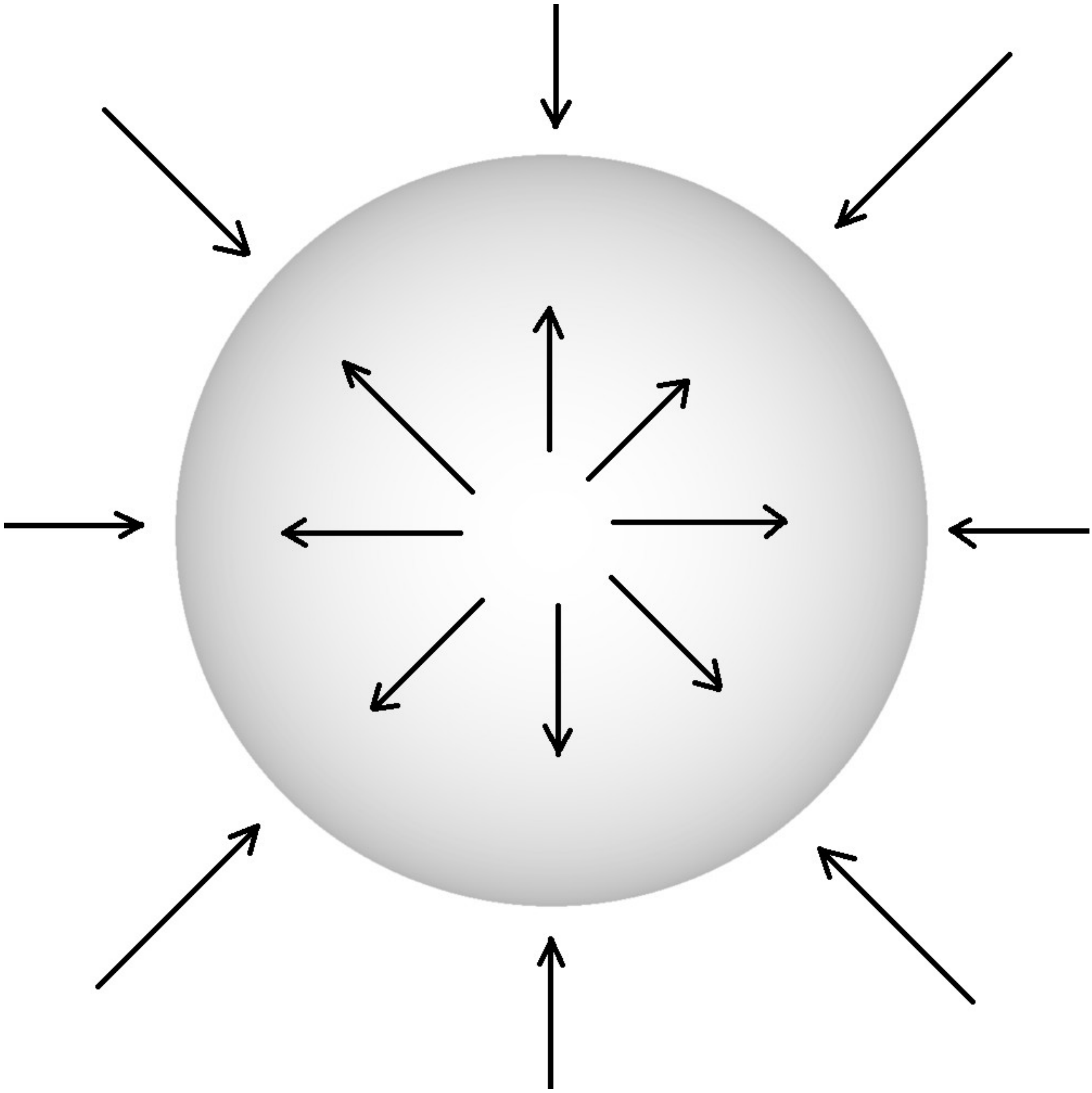

Figure 4-3.

Obviously, if a large external object hits a star, irrecoverable destruction of a part of the restraining cover and subsequent star explosion can occur (according to the principle of explosion of an ordinary balloon with a repulsive internal substance and a restraining external layer).

Depending on the properties of the star (thickness of the external restraining layer) and the external object and their velocities, the following presumable basic scenarios of the explosion may be distinguished:

1. The formation of a hole with the flow of an internal liquid from it without further destruction (what is most likely called the "Astrophysical jet"), with the existence of a hole until the pressure inside decreases and the hole jams and disappears. Movement in the space of such an object corresponds to a jet-propelled projectile.
2. The rupture of the shell into large parts with pushing away by internal pressure, with possible jet movement of large parts due to the mass of "liquid jet fuel" located at one of the sides.

3. Uniform scattering in all directions of small fragments, which should be characteristic for a star with a thin outer layer.

The most interesting thing in these processes occurs when a substance with a high density of a field sharply collides with an external rarefied space.
A sharp decrease in the field density should catch the particles at random positions of movement in space and this should lead to the formation of a large number of "wrong" structures, such as unstable atoms or atoms with non-standard form.

When substance moves from the center of the star to the surface, the process of "cooling" occurs very smoothly and the probability of the formation of "wrong" structures should be much smaller since atoms (and smaller particles) should have a lot of time to go through the process of perfect adaptation in quiet conditions.

As will be shown later, the formation of complex, and especially atoms with "irregular" form (with a large number of nucleons) is a complex process that most likely has a small probability of happening in smoothly running processes, and it should be such explosions, or sharply changing processes like volcanoes (or similar processes inside a planet or a star) create conditions for the formation of a wide variety of atomic structures.

5. Microworld.

The macroworld refers to the interaction of space objects from asteroids (and similar) to stars.
Under the microworld is meant the interaction of atoms (and smaller structures that affect the bonds inside of atoms).
Nucleon here means the hydrogen atom – the standard uniform unit of a complex nucleus. Nucleon in turn consists of smaller particles, where gravitons are the very basic elements of all structures.

The general formula of gravity:

$$F_g = \sum F_R + \sum F_A$$

where:

$\sum F_R$	The sum of repulsion forces.
$\sum F_A$	The sum of attraction forces.

expressed correctly in full with all dependencies, should work everywhere, from the macroworld to the microworld, but, nevertheless, it is obvious that there is a large dependence on (1) the density of the substance, (2) the density and behavior (with change of distance) of the field components, and this calls into question the need to create a single formula that would work from stars to atoms, which should be possible, but not practical.

It can also be noted that physically there are no (at least obvious and common) processes that would flow from the macroworld to the microworld and would require the use of a single formula.
The formulas of gravity for space objects were composed exactly for space objects and when a collision with destruction begins, then the use of such formulas no longer makes sense because the objects for which they were composed cease to exist.

The interaction of atomic nuclei.

The main difference between atomic nuclei and macro-objects is that with an increase in the density of matter and density of outgoing flows at small distances, it becomes impossible for objects to fall on each other or collide with destruction (excluding consideration of particle accelerators or isolated collisions in space), where the graviton is an extreme representative consisting only of the repulsive field and the atom stands in the middle with the presence of expressed both, repulsive and attracting components.
Accordingly, such objects can have a stable "orbit" without rotation around the center, where the "orbit" is the point of change of attraction to repulsion.

The change of attraction to repulsion is a fairly obvious thing, otherwise the molecules and crystal structures could not be formed, but here there is one very big discrepancy:

> hydrogen atoms (/nucleons) can form molecules or crystal lattices, and at the same time form compound atomic nuclei, but the distances between the nucleons (/hydrogen atoms) in these structures are extremely different (and in accordance with the change of attraction to repulsion, this distance should be one).

When considering geometry, the answer, again, in a general form, quickly becomes obvious:

> the rapid change in the absorption area of the field with a change in distance creates another potential well at the point B relative to a more standard potential well at the point C, caused by a "normal" change in the sign of the force (when superimposing (graphs of) the repulsion and attraction forces) with change in the distance (without significant influence of the component depending on the geometry = without sharp change in the field absorption area).

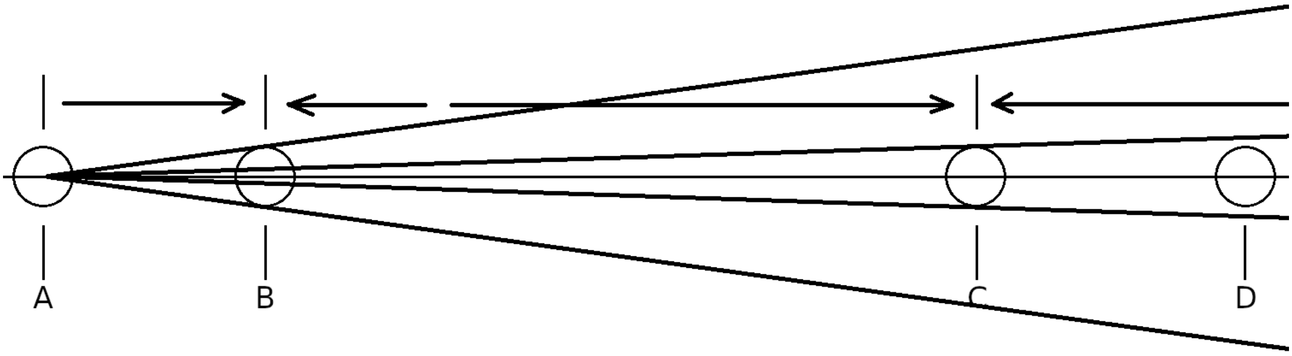

Figure 5-1.

The diagram below (taken from the main book) shows the alternation of forces of attraction and repulsion in a wider range where the stable state between sections 9 and 8 is the bonds between the nucleons. (Sections 1-3 relate to a schematic description of some evolutionary processes not related to this article.)

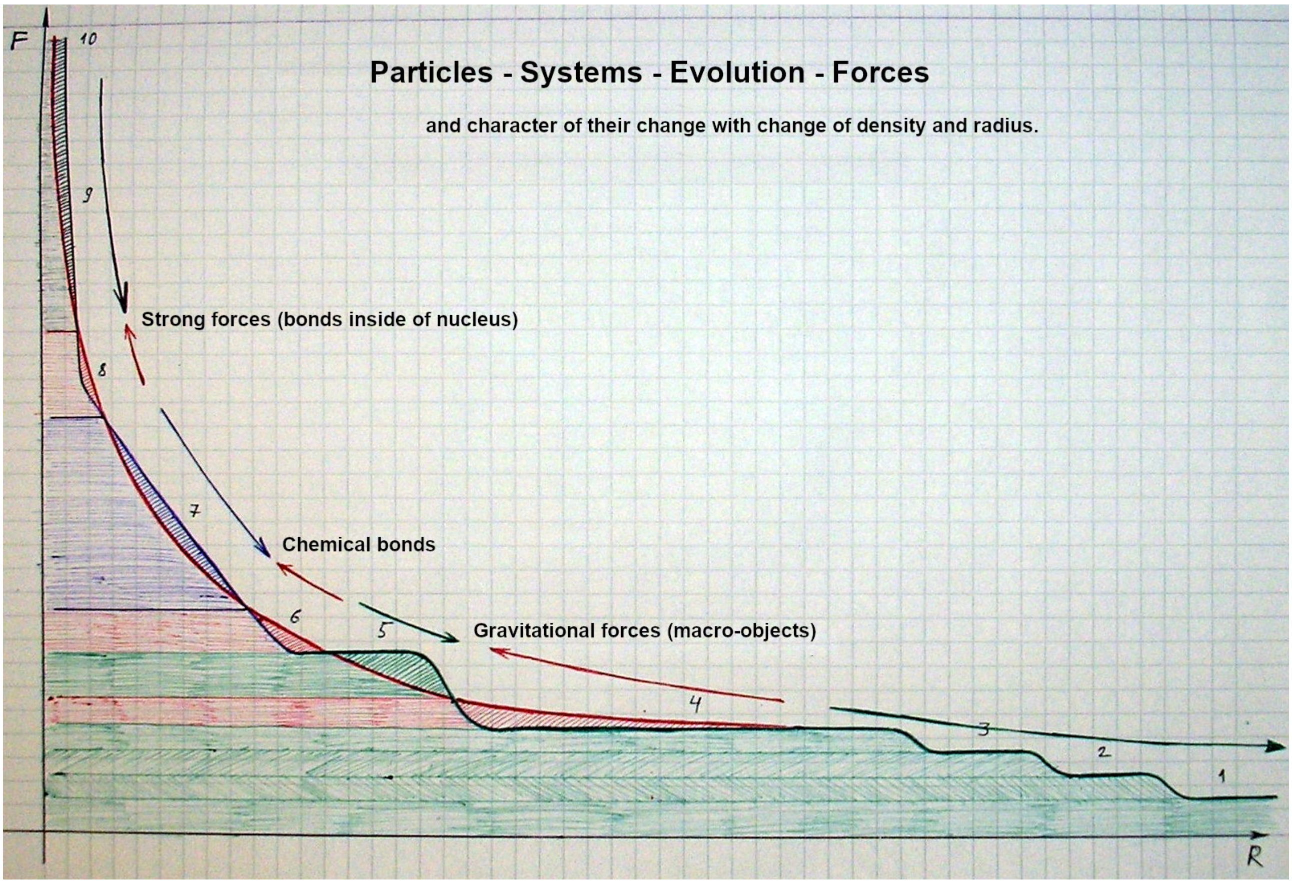

Figure 5-2.

Also here can be considered another hypothetical effect that should not simply (supposedly) exist, but play a critical role in the formation of complex atoms, which is the capture of particles by the repulsive force of nucleons.

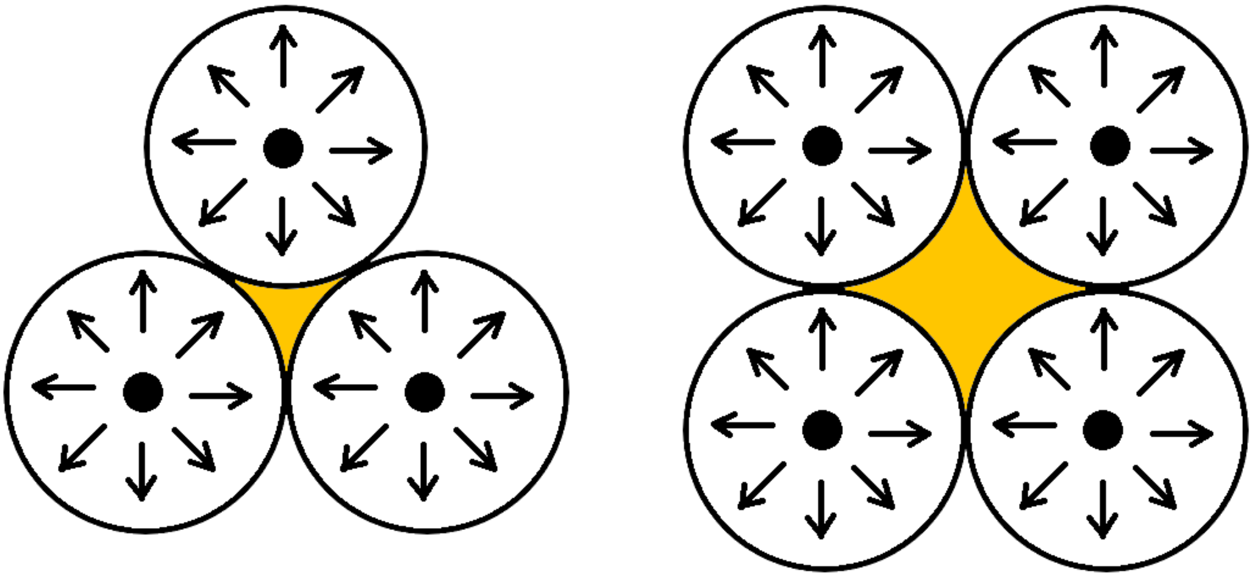

Figure 5-3.

And a variant with a smaller capacity for particles.

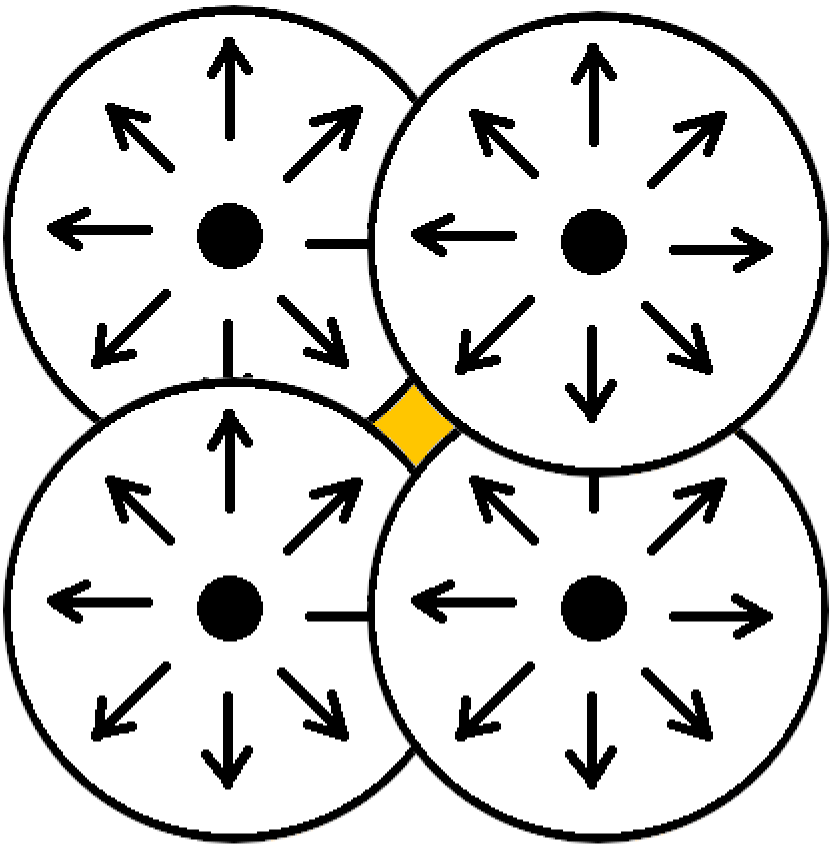

Figure 5-4.

This assumption is supported by the amount of energy/particles released during nuclear decay and transformations.

From that, how small a margin of distances (in the atomic bond range, which is not very far from chemical and crystalline) remains at the attraction-repulsion graph for the formation of atoms with several nucleons, it can be assumed that this is an extremely complex and limited process, where a stable existence of a maximum of only a few hundred of nucleons in the nucleus is possible (which is simply microscopically small compared to the variation in the size of cosmic macro-objects), and accordingly there is a possibility that without substantial participation (of large amount) of third-party small particles trapped by repulsive forces it would be impossible to create complex atomic configurations.

Also, this nuance with the capture of particles by repulsive force complements the section on the formation of atoms, because the capture of a large number of particles (when complex atoms are formed from simple) in an extremely smoothly changing external field (presumably) would be less probable than in an extremely rapidly and dynamically changing field like during the explosion of a star.

It is hard to say which of the processes of formation contributes more to the appearance of complex (and unstable) atoms (smooth movement of matter from the core of the star to the surface or a rapid chaotic change in field density as during a star explosion) without detailed analysis and modeling.

6. Chemistry. Magnetism. Electricity.

6.1. Chemistry, crystalline bonds.

The first thing to consider is the periodic table.
After a short meditation on it, it becomes obvious that the dependency in the series is the following:

> the closer the structure of the nucleus is to the ideal sphere, the less active the element is, and vice versa, immediately after the sphere the most "non-round/irregular" elements with the highest chemical activity go.

Technically, this expression of the structure in terms of chemical activity is also quite obvious:

> the more "not round/irregular" shape of the atom, the more points of connection it can create with another atom, and (1) the stronger the chemical bond, and (2) the more possibilities for manipulation in creating molecular structures and chemical interactions/effects.

The "table" actually is a triangle where increase of the length of the rows is explained by the fact that more elements are needed to smooth out irregularities on a sphere with a larger radius.
Why the size of the rows goes in pairs has to be clarified, but basically it is also obvious, where it can be assumed that the sphere with the next radius is not completely filled initially, but the nucleons are distributed evenly on the surface, making the sphere almost round with small evenly distributed irregularities, and then, in the second stage, empty spaces are filled to make more perfect sphere. From this it also follows that the first of the two parallel rows on average is more chemically reactive.
In reality, during formation of atoms, all this of course takes place absolutely chaotically and nucleons do not join atoms exactly in such sequence, but according to the resulting statistical distribution the "perfectly round" and "round with evenly distributed irregularities" are approximately equal in the respect of similarity of chemical properties.

The fact that the rows in pairs have the same size is a coincidence. In fact, there is no coincidence and the size of the rows became aligned thanks to such a trick as an "isotope", where several adjacent atoms with similar properties are combined into one chemical element.

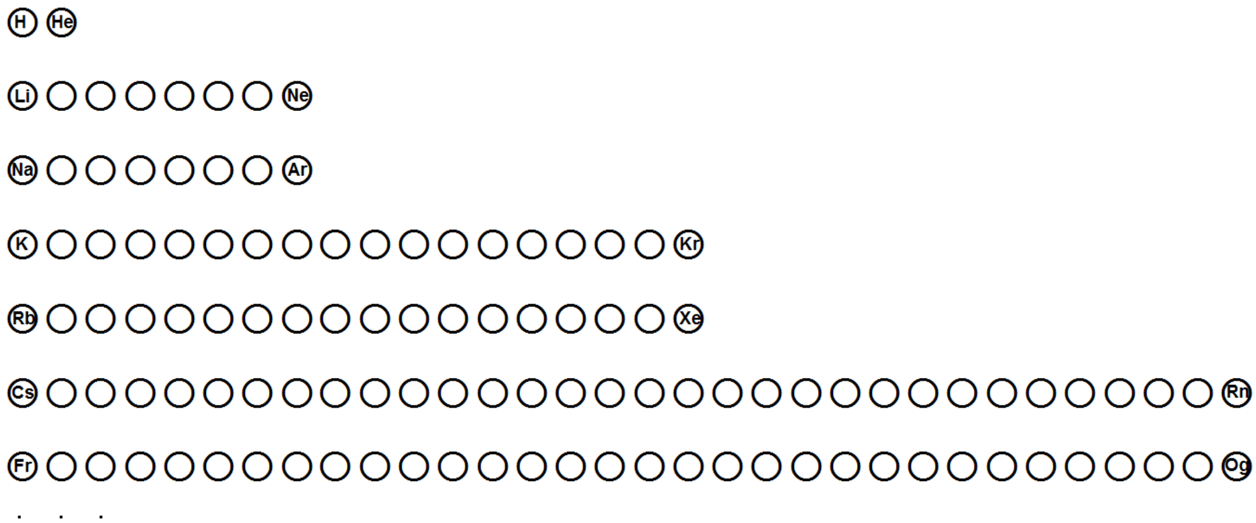

Figure 6.1-1.

Next has to be figured out why surface irregularities lead to increased chemical activity.

Let's consider the interaction of two atoms (atoms with one nucleon) from the point of view of the change of attraction and repulsion forces at the level of chemical bonds.
In this picture, the field is indicated up to the level of formation of chemical bonds (to the potential well at the junction of attraction and repulsion).

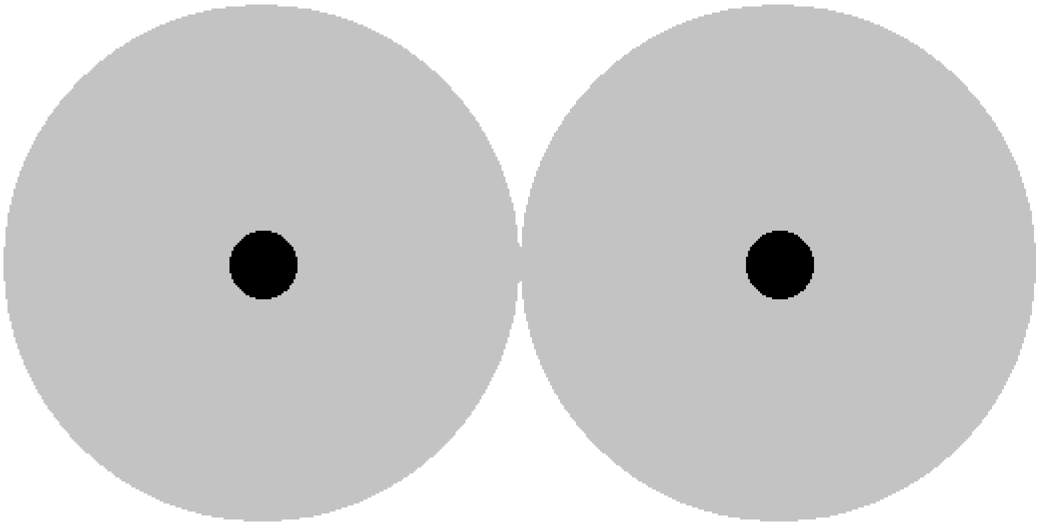

Figure 6.1-2.

Below is a schematic diagram with the forces.

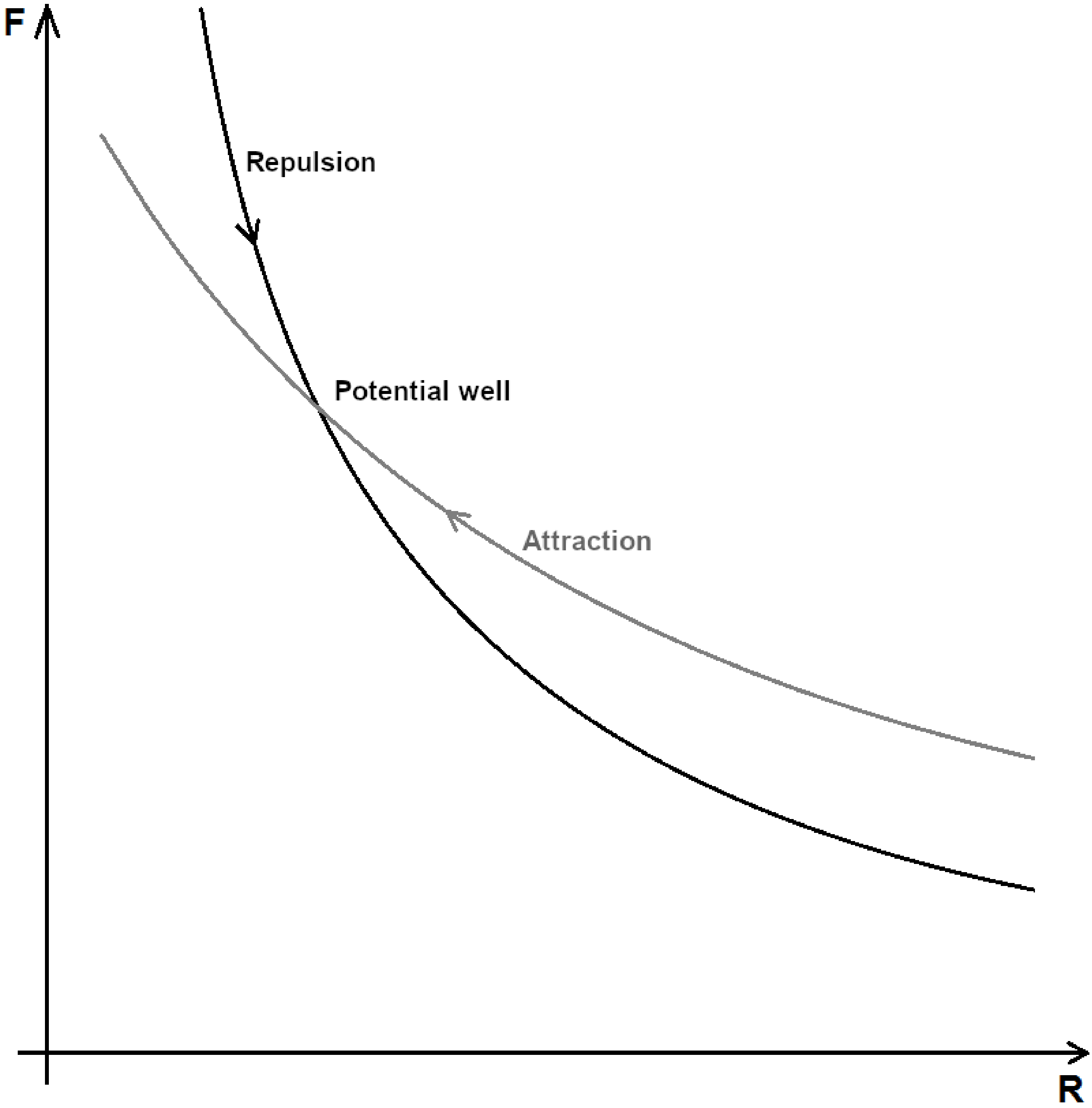

Figure 6.1-3.

At the junction of the change of forces is a potential well.

Now let’s consider the case of interaction for an atom with several nucleons.

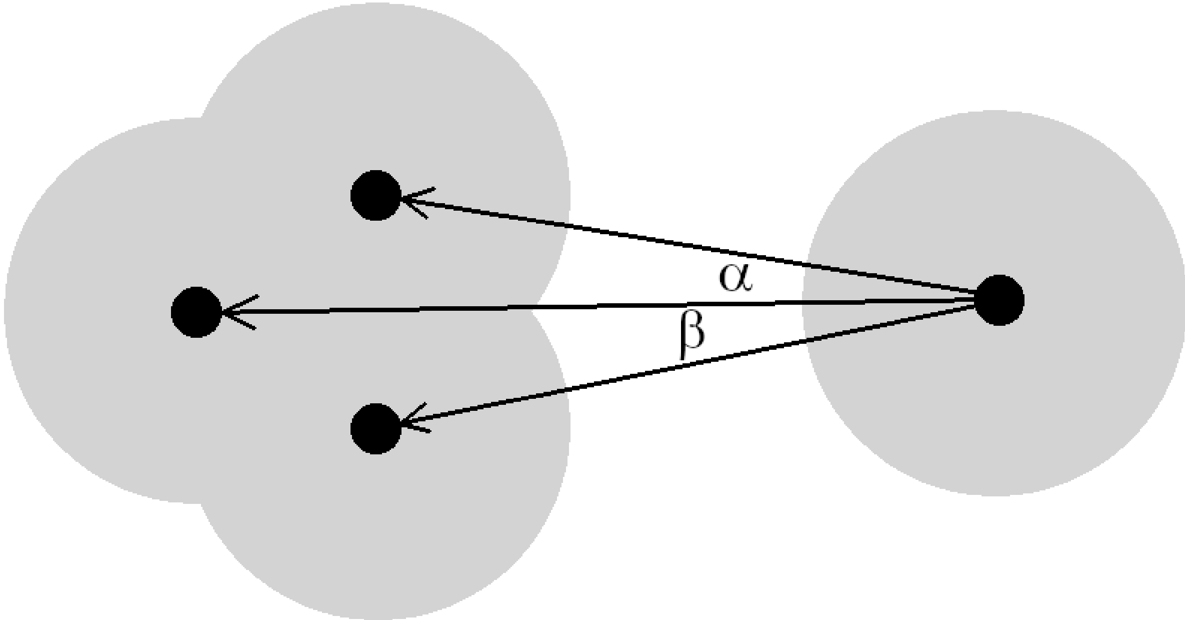

Figure 6.1-4.

The first obvious difference is that in the case of many nucleons, the nucleus represents a (very) distributed mass relative to the center of the nucleus / mass of the atom.
Interaction is defined as the sum of the fields created by each nucleon.
In this case (of positioning nucleons at the scheme above), the direction to one of the nucleons coincides with the direction to the center of mass, but the other interactions are added taking into account the angle of action, where in the general case the forces are added as vectors:

$$\vec{F}=\sum_{i=1}^{n}\vec{F}_i$$

This is a very simplified formula (for calculation of forces inside of nucleus), because it is also necessary to take into account the effects of field shielding, which should further reduce the total field (and make its calculation much more complicated).
From this it follows that:

$$\left|\sum_{i=1}^{n}\vec{F}_i\right|<\sum_{i=1}^{n}\left|\vec{F}_i\right| \quad \text{, for n > 1.}$$

Accordingly, the distribution of the mass of the nucleus with the number of nucleons > 1 (relative to the concentrated state of the mass as in one nucleon) physically has the following effect:

> the average value of the field strength of a nucleus with a multiple nucleons is always less than that of an algebraic sum of forces, which means that the potential well of such a nucleus is always smaller than that of a single nucleon.

In the following schematic graph, the potential well for one nucleon (hydrogen atom) is designated as N1, and for a nucleus with many nucleons as Nx.

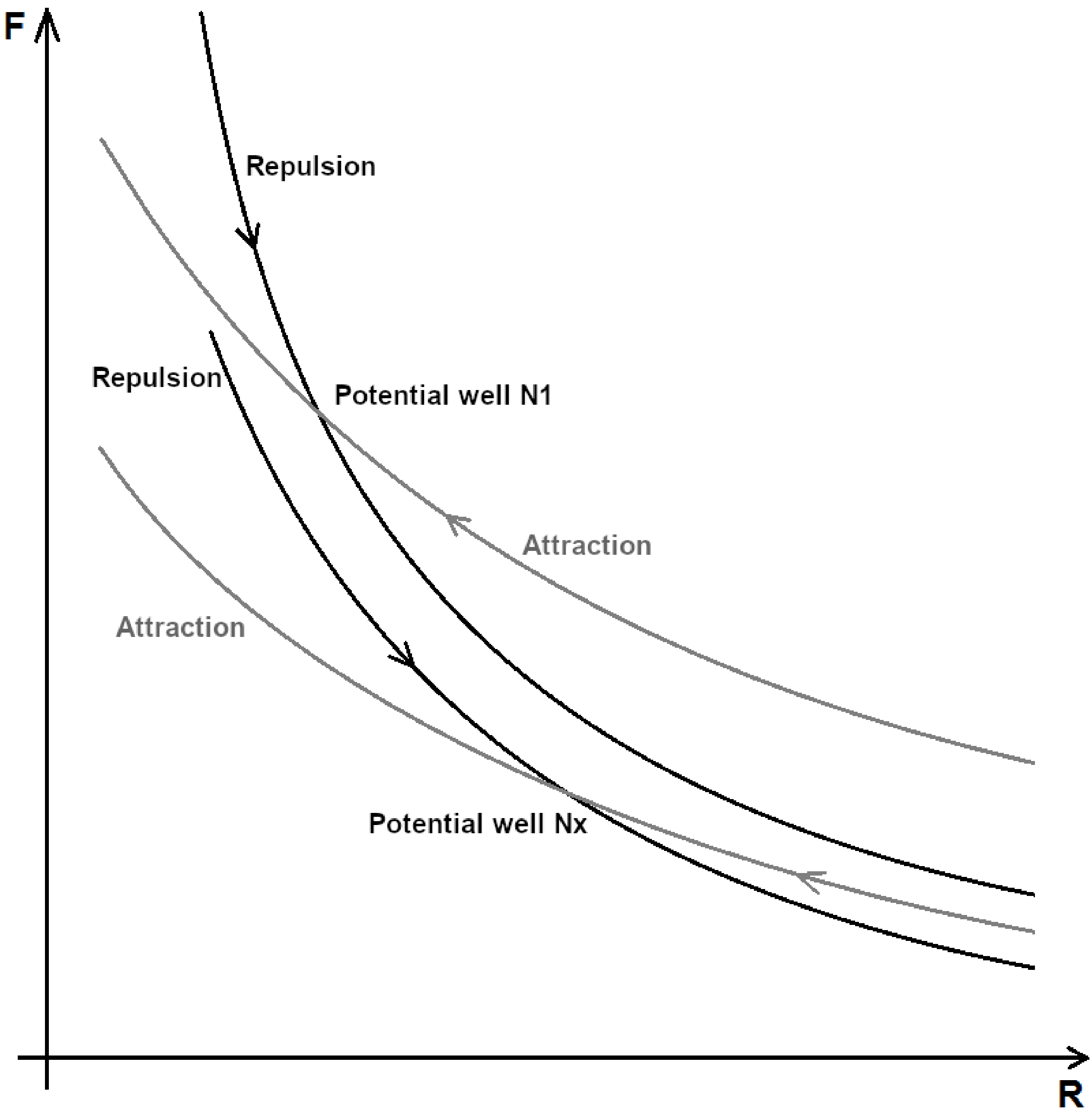

Figure 6.1-5.

The main conclusion of all this is the following:

> The farther a nucleon is from the average distance to the center of mass of an atom, the less its field is smoothed by the average field value, and the more expressed are forces and potential well on the ledge of the outer part of the atom made by its own field.

Also, the "nucleon isolation effect" should be enhanced by the fact that the field forces decrease with distance not linearly, but by inverse-square law.

Taking that Nx is the average value of the potential well over the entire atom, then each of the nucleons (in terms of the forces generated in its direction) will be positioned somewhere along the dotted line connecting Nx and N1, as indicated in the following graph.

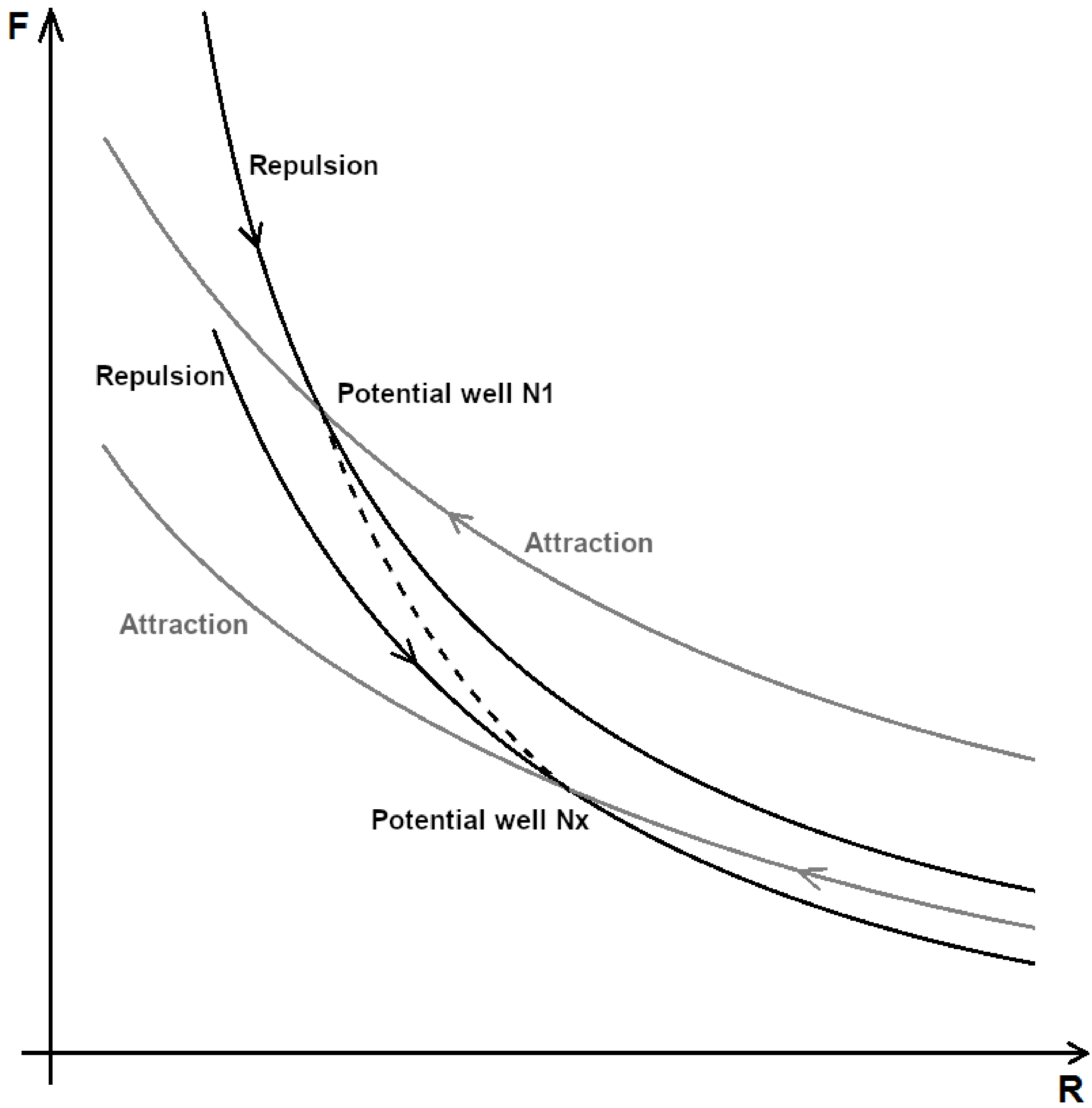

Figure 6.1-6.

Considering that atoms consist of uniform nucleons with a field (apart from small particles distributed in the field as thermal particles/electrons/…, which may be completely absent), we conclude that the described dynamics of interaction and the method for determining the reactivity of nucleons should be the only basic principle in the case without taking into account the influence of external and temporary (in the field of the nucleus) particles and their forces, and one of the main ones when taking into account particles in the field of the atom.

The following schematic image shows an atom with an isolated nucleon with expressed value of its forces and a potential well.
The first atom is a supposedly inert gas, and then with the addition of a new nucleon, a distinct portion of the field is formed with a more expressed potential well relative to the rest of the nucleons and their field.

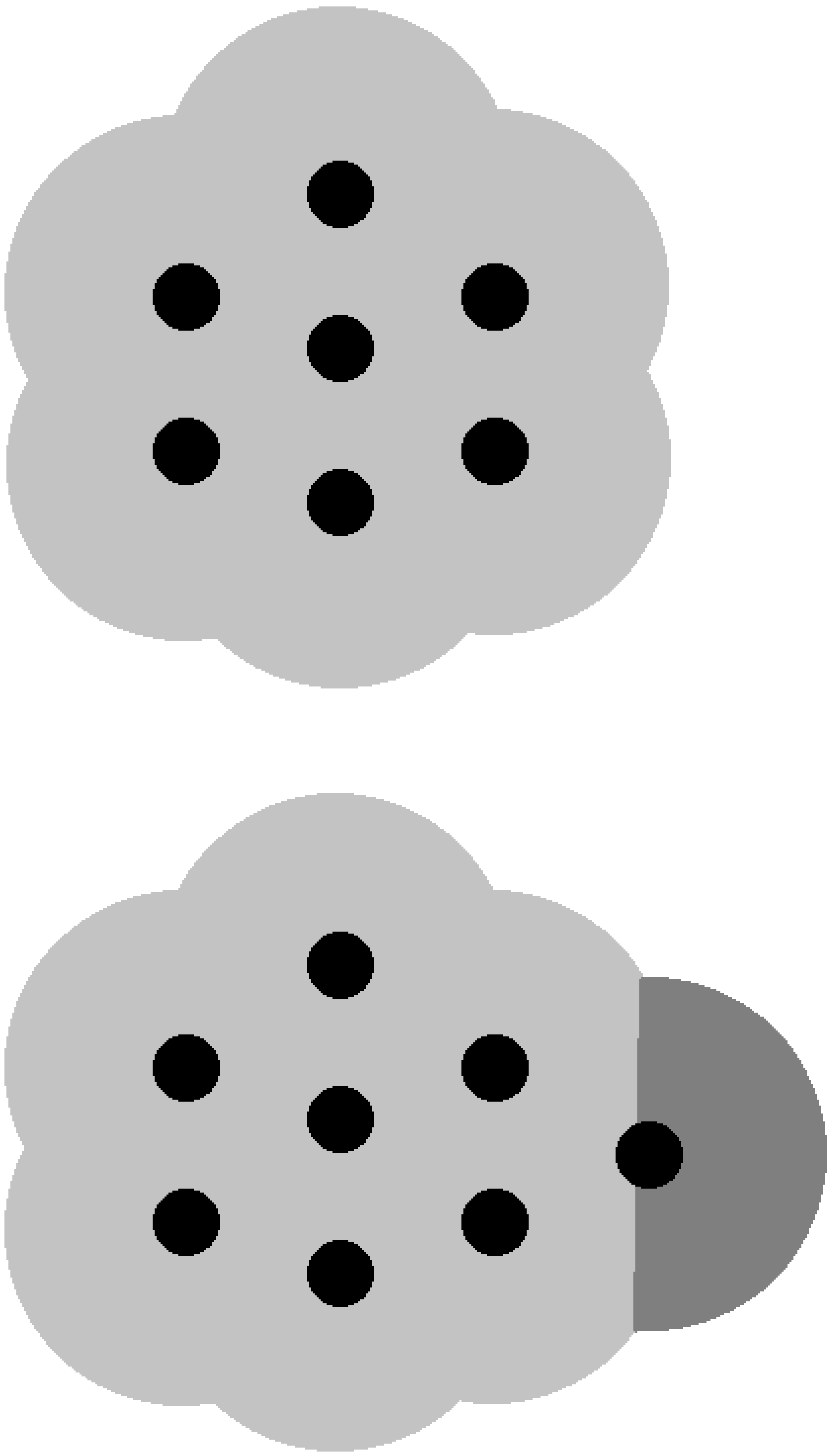

Figure 6.1-7.

6.2. Magnetism.

Some of the facts about the magnets used in the reasoning:

- magnets have a strong field (much stronger than gravitational),
- when the material is heated, its magnetic properties disappear,
- after being placed into strong external field, the material (capable of magnetizing) can receive and maintain magnetic properties,
- the magnetic properties of various materials are different, both in terms of creating a magnet and in influencing other materials,
- the electrical conductor has magnetic properties.

This subject is interesting in that magnets can create a very strong field, which should be characteristic for a very large mass in the expressions of the gravitational field, and at the same time the weight of the magnetized material does not differ from the non-magnetized.

It is obvious that the magnets have in their field trapped particles that create this interaction.
During the passage of current through the conductor, these particles are electrons, and accordingly it can be assumed that the magnetic properties are created either by electrons or similar particles.

By "electron" here is meant a particle that exists in large quantities in nature and is larger in size than a graviton, which is not an obligatory part of an atom.

Let’s propose and analyze several assumptions about what the mechanics of magnetic interactions can be.

1. A strong field is created by a small number of particles as an electron as the sum of their gravitational field and the field of an atom due to the specificity of the interaction of fields in the case of electrons presented in the field of an atom. Such particles can remain at a stable (for a given particle) distance from an atom, where the field of the atom itself already has a small density, but field of the particles at that distance has larger density (though only around the particles themselves) and this presumably creates expressed field at a larger distance from the nucleus.
Since the fields simply have to be summed up according to their strength, this should not be the cause, because the gravitational field of such particles in this case will still remain negligible.

2. The magnetic field is a strong gravitational field created by the actual total mass of the substance present in the atom and around the atom in its field (which we cannot detect as the weight of an object due to the large gravitational permeability of this part of the mass).
This assumption is based on the fact that the weight of objects that we detect can differ significantly from the real mass of matter because of gravitational permeability.
The lack of a proportional increase in the weight of substances attracted by a magnet strongly refutes this assumption.
This assumption is refuted by the fact that, despite the possibility of the presence of mass undetectable (or poorly detectable) by a gravitational field, it, being in the structure of the material, must nevertheless influence the inertial mass and properties of the object because it is connected with the material through the field, what is not observed, neither as expressed significantly nor especially proportionally to a change in the field strength.

3. The third and main assumption is that this field is created by particles different from the graviton, where, obviously, the principles of the mechanics of interaction through the field are the same, but are different parameters of the field (velocity, mass, permeability) and, accordingly, is different dynamics of acting on materials and in the manifestation of magnetic properties of various materials.

Also could be assumed the existence of not a two-level field system, like with graviton as basic particle of a field, but a three-level one, which further complicates the dynamics of behavior of the field and its influence on various materials, which can occur if the "magneton" is significantly larger than the graviton.
The electron either is itself a particle of the field accelerated to a certain speed, or (more likely) emits, besides gravitons, larger particles with different permeability which determines very different magnetic properties of various materials.
This is also consistent with the following fact:

> objects like nucleons, due to the strong gravitational field, emit large particles with smaller probability and the main component of the entire radiation is the gravitational field, while smaller objects, like an electron, due to the smaller force of the field are more likely to emit larger particles (as presumable "magneton"), which makes magnetic field more expressed for them.

Those facts that this field:

(1) is extremely differs from gravitational by the strength, and
(2) is extremely different in its effect on various materials,

strongly favors this assumption.

Technically, there is not only no reason to talk about the impossibility of the existence of a field other than gravitational in terms of parameters of the field, but quite the contrary, there are reasons to say that this all should exist because:

1. The radiation spectrum of particles by the Sun is large (and also it's possible that the same particles can be formed or emitted inside of the Earth under conditions of a large pressure of gravitational field), which makes the distribution of these particles in the environment significant.
2. The considered mechanics of gravity for a graviton proves that all this exists in systems of particles with multi-level radiation.

Also, the fact that there is a large difference in gravitational permeability suggests that this particle of the field is extremely sensitive to the structure of the atom (and possibly molecules and crystal lattices) in the respect of the permeability, which should mean that this particle should be much larger than the graviton.

And also taking into account that the formation of structures of substance (in stars) must have a highly stable statistical dynamics regarding composition of the most basic structures, it follows that structures larger than graviton (assuming that it is the minimal structure with a field) are created from gravitons, and further the conclusion follows that the magnetic field, in contrast to the 2-level gravitational, should be a field with (at least) a three-level structure. This greatly complicates the behavior (and analysis of this field) but also explains the reason for large difference in the impact on different materials.

Let's consider (the most) presumptive formation of a permanent magnet, which, by principle, fully corresponds to the capture of external particles by the repulsive field of nucleons in the nucleus, only in this case the capture is made by the repulsive field of atoms in the molecule or crystal lattice.
Accordingly, the same picture, only the nucleons are exchanged for atoms.

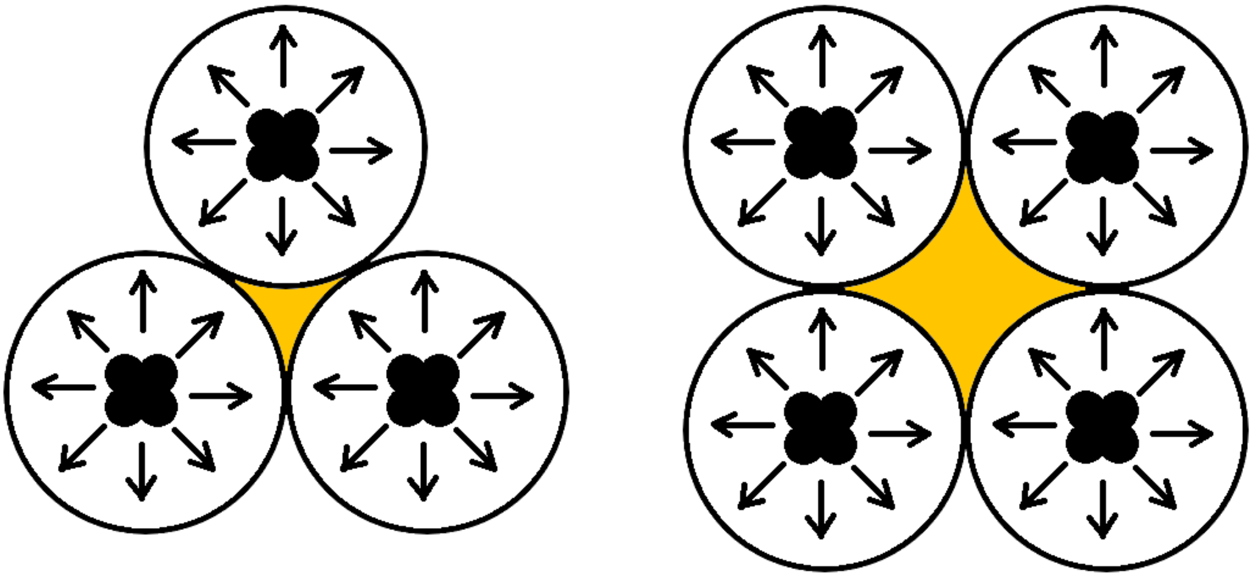

Figure 6.2-1.

When heated, these structures either disintegrate completely, or the bonds weaken to the level when the expressed potential traps no longer exist and the trapped particles that created the magnetic field fly into space.

6.3. Electricity.

Some of the facts used for the reasoning:

- materials (atoms and structures composed of atoms) may or may not conduct electricity,
- the conductors under the action of current heat up and produce heat (which is less expressed for cooled superconductors),
- there are also such phenomena/states as:
  - electric arc,
  - photo effect,

  other.

We will continue to call the particle of the electric current an electron, but with the following differences:

(1) this particle is not an obligatory component of the atom,
(2) electric current is formed by the flow of a large number of such particles (and its mass should be very small) compared to the number of nucleons at the nucleus.

Also, by analogy of the attraction of nucleons and in accordance with the formation of bonds in molecules and atoms, it can be said that it does not have to move around the nucleus to be presented in the field of the atom, but can simply sit in a potential well at a distance characteristic of the atom-electron system and their fields.

Let's try to examine and clarify the basic properties of the mechanics of the behavior of electric current and the properties of an atom affecting these processes.

In addition to the (presumable) presence of a stable level (= potential well) for this particle in the field of an atom, the only remaining parameter that can affect the conduction process and electrical properties is the structure of the nucleus and the forces of attraction on the surface.

Regarding the behavior of electrons can be said the following:

- electrons, like other particles with a field, can attract each other, and may have some potential well that holds them together (on the principle of chemical bonds),
- which also affects the properties of the electron flow making it look like a water flow, as seen by the behavior of an electric arc, although in this case it may be due to the total (created by all electrons) field and the attraction of particles to the center of such a cloud, what can have greater value based on the fact that electrons also have expressed magnetic field (and it is possible that they are the same "magnetons" but only a different speed of movement).
- An electric current is created by the pumping of electrons and flows towards a lower density of electrons, and, accordingly, it is obvious that this stream is essentially flowing in a similar way as water flows over the surface of the Earth.

From the properties of the electron flow and the available properties of an atom, we can conclude that the flow of current across the surface is possible if there is a "channel" for this flow:

(1) a potential well capable of keeping the flow must be present on the surface, and
(2) it should not be a well, but a sequence of irregularities ("potential channel") along which this stream will flow, and also move from atom to atom.

Since the filling of nucleons on the surface of the nucleus with advancing along the rows of the periodic table/triangle of Mendeleev occurs in a "random" manner with respect to conductivity (the addition of atoms is determined by the geometry and the forces of attraction/repulsion, and not by the properties and principles of conductivity), then there should not be strict rules for determining conductivity by periodic table, but on average the largest number of irregularities (and correspondingly the highest probability of forming a channel from the potential wells) is for elements that are closer to the middle of the period.

From the following facts:

(1) capture of photons by the current increases the current (photoeffect), and
(2) heat (and in some cases light) is released when current flows over conductor,

it can be concluded that particle of heat (and of light) and particle of electrical current it is the same particle, but moving at different speed, where:

- photon is the fastest of them,
- then a heat particle goes, which is a photon moving at a slower speed than during the formation of light and having less energy and permeability, and
- an electron is the slowest photon that moves in a stream of electrons under pressure and direction of flow, and possibly can be in a state without its own speed relative to the atom.

A photon, when hitting an atom, is decelerated by the field of the atom and stops at a certain point where repulsive forces prevails (beyond the potential well due to inertia), giving its kinetic energy for flying to the maximum distance in the region of repulsion of the atom, and then, due to repulsive forces, it accelerates in the opposite direction to the same speed (assuming the loss of its speed (because of damping of oscillations by gravitational field) during one oscillation is completely negligible).

But when getting into the interconnected electron flow/cloud (slow photons) and its total field, the dynamics of behavior should be different, and, as practice shows, the photon can be captured by this flow, when hitting the conductor with current, and then move as a particle of this current, thereby increasing electron flow.
On the other hand, a slow photon (/electron) that has lost contact with the flow and escaped from the potential well can be accelerated by the repulsive field of the nucleus (if it has lost contact with

the flow while in the repulsion zone of the atom field), but in the standard case, only up to the speed of a particle of heat flux.
There are many ways to make such combinations and constructions of atoms and crystal lattices that greatly change the way electrons flow and fly out of a stream, where heat is generated in the standard case, but special material structure can make electrons fly out in the form of a wide spectrum of light (standard filament lamp) or in a narrow spectrum of light (diode lamp), etc.

6.4. Chemical reactions.

Processes with the capture of a photon by a stream of electrons look equivalent to the running of slow chemical reactions involving photons (for example, photosynthesis).

Photons can gradually accumulate in the potential well of an atom, and at some point, having a sufficient field in the group of photons (which have already become electrons), can, by adding to the field of the atom, attract another atom and form a chemical bond.

At the same time, the emission of photons (in a wide range of speeds, from heat to light) during the combustion of molecules formed in the described above way leads to more important conclusion that photons (which have become electrons) are not just catalysts in this case, but also participate in the reaction by becoming part of the chemical bond, and by the amount of energy released during the decay, we can say that they are captured there in large quantities, and thus, most likely, strengthen the bond.
Existence of endothermic chemical reactions (which absorb heat) shows the interchangeability of photons, electrons and particles of heat (/heat flux).

Thus, the difference, or one of the main differences, of chemical bonds from crystalline ones is the participation (in a large number) of electrons/photons in the formation of bonds between atoms.

7. The current main task of physics.

For the moment we have determined that all the main applied tasks which constitute or are depend on such areas and knowledge as:

- chemistry,
- electricity,
- magnetism,
- resistance of materials,

from the point of their efficient use, primarily and practically in full extent are defined by:

(1) understanding the correct mechanics of gravity, and
(2) by the structure of the atom (which further defines the field of the atom and further all properties and structures of materials based on atoms).

Accordingly, the main task of physics, which would make it possible to solve most efficiently the above (and dependent) tasks is:

1. Calculation of the structure of all atoms (what other applied tasks depend on in the largest part).
2. Developing an understanding of nature from the standpoint of the Theory of Everything to the level which allows:
   (1) to calculate the structure of all atoms, and
   (2) to model structures and properties of atomic compounds at the level of chemical and crystalline bonds.

The need to calculate the structure of atoms as a primary task (which includes the task of developing an understanding of the calculation of fields to a given level) can be proved as a theorem:

> The distribution of matter in the complex structures of matter (from the point of view of practical use by people) is uniform up to the nucleon (assuming the main particles between the graviton and the nucleon are standardly present and unchangeable as the nucleon), then the diversity begins in the structures of atoms, and even greater diversity in the structures formed on atoms (molecules, various lattices, …), and accordingly, the point of appearance of the first diversity (various structures of atoms) is critical for understanding the other processes.

8. Calculations.

This section actually is not calculations, but a minimal introduction and ideas of the author on this topic.

First of all, it would be necessary to find/deduce the main characteristics of the field:

- velocities of the particles of the field: V_{g1}, V_{g2}
- mass of the particles of the field: m_{g1}, m_{g2}
- (average) radiation frequency of particles g_1 by nucleon
- (average) frequency of radiation particles g_2 by particles g_1
- gravitational permeability of substance(s).

Some of the main data available for analyzing the field and starting calculations and deduction could be taken the following:

1. The axial rotation of the Moon.
2. Podkletnov (and team) experiment on the shielding of gravity by a superconductor and shielding/dispersion of gravity during the rotation of the superconducting disk.
3. Distribution of links between stars and groups of stars in galaxies.

Further consideration goes with extremely large approximations and simplifications, and more in a schematic form than on real data.

Podkletnov experiment.

Podkletnov experiment consisted of two parts:

1. The cooled superconducting disk shielded gravity and reduced the weight of objects above it.
2. As this disc was rotated, the effect of shielding was increasing and objects lost even more weight.

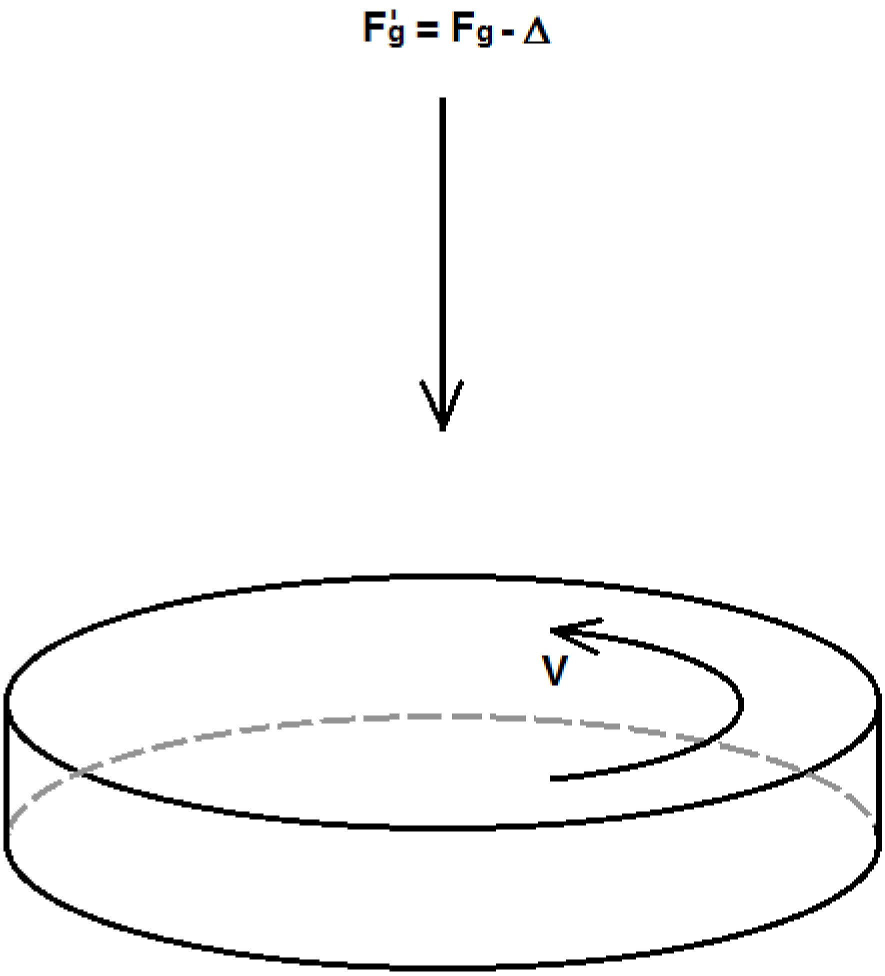

Figure 8-1.

The essence of the process for both parts of the experiment is obvious:

1. In the first case, primary particles of the field are reflected, and, accordingly, their smaller amount behind the disk creates less of gravitational pressure.
2. The rotation of the disk scatters the primary particles of the field, which also reduces the gravitational pressure above the disk.

The influence of cooling on a superconductor.

Since in the experiment, conductor cooling is used, which in this case can have a critical effect on the amount of weight reduction above the disk, let's consider the supposed effect of cooling on this process.

The result of the experiment (reduction of the weight of objects above the disk) shows that cooling reduces the gravitational permeability by particles g_1.

The spectrum of particles that are widespread in our environment, besides nucleons and gravitons, also includes thermal particles.

From the resulting effect of heat, we can draw the following conclusion about the mechanics of the action of thermal particles:

Thermal particles distributed over the material (in the atomic field) weaken the bonds between the atoms of the material structure (molecules and/or the crystal lattice), creating for atoms many "distracting" forces over the material structure, which, affecting the atom and adding up with the force of attraction between the atoms, weaken the forces of attraction between atoms (and also (to a lesser extent) it affects the forces of attraction in an atom between nucleons).

By its principle the process of weakening of bonds in this case is perhaps a bit similar to the reduction of forces (and of potential well) discussed earlier for atoms with several nucleons, where the principle itself is that a more distributed mass reduces the directional effect of a force relative to a more concentrated mass.

Accordingly, the cooling process is a process of pumping out thermal particles and strengthening bonds in the structure between atoms (and nucleons).

Strengthening bonds between atoms leads to a decrease in the distances between them and, increasing in such a way density of the substance, to a decrease in the permeability of the substance.

Perhaps the emphasis here should be shifted to considering the effect of thermal particles on the distance between nucleons in the nucleus of an atom, since under conditions of high density of matter, as in a nucleus, even minimal changes can potentially have a significant effect on permeability, in contrast to the crystal lattice, where the minimal change of distances in a highly rarefied medium can have a minimal effect on the permeability by the g_1 particles. In other words, the efficiency of the change in g_1 permeability in a material with a higher density is presumably substantially higher than that of a material with a lower density with the same change in the external field weakening internal bonds.

The rotation of the superconductor.

The rotation of the disk reduces the amount of the field above the disk according to the following velocity addition scheme during collision (of atomic nuclei/nucleons with g_1 particles of the field):

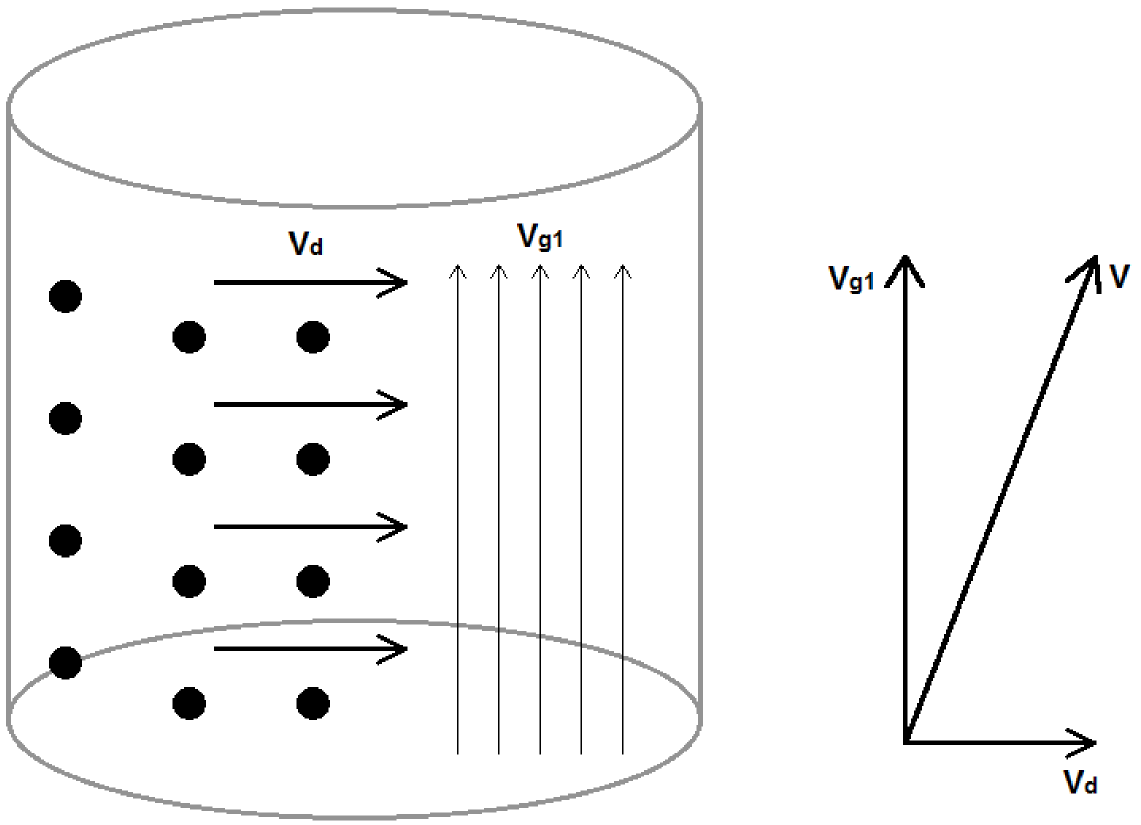

Figure 8-2.

Vd is the average (instantaneous) speed of movement of the atoms of the disk.

The conditions of the problem and the beginning of the solution.

At this stage of deduction and approximations, we take the following hypothetical data for this experiment (which have some approximation to reality):
Let be:

1. Disk dimensions:
   Radius = 50 cm
   Height = 1 cm
2. Average instantaneous speed of rotation (/movement of atoms) = 100 m/s.
3. The amount of weight lost above the disk due to rotation = 1%.

In this case, the disk is considered completely filled whereas in the original experiment it was empty in the center.

Let's try to analyze this process and find some characteristics of the field based on this conditions.

We will ignore the reflection of the field by a fixed disk and only consider the dispersion of the field because of the rotation of the disk.

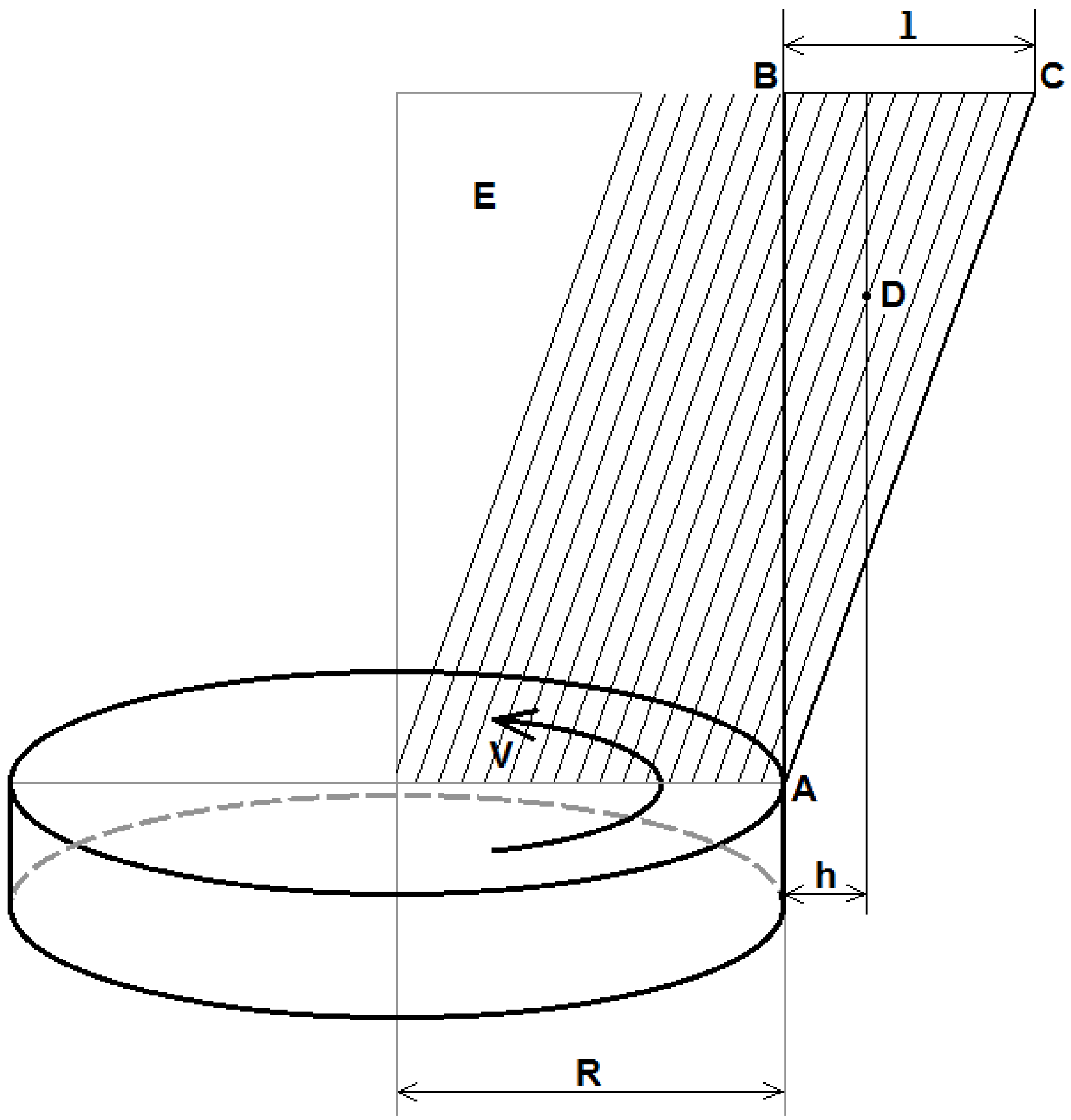

Figure 8-3.

The first question is the character of the interaction of the field flux with atoms, molecules and the crystal lattice.
The absolute majority of the volume of the crystal lattice is completely permeable for the field and repulsion occurs on the nuclei and in the places of the maximum density of the field of atoms and molecules.
Initially, it is necessary to find the percentage of the field which, when passing through the disk, interacts with the atoms of the disk and deviates. This determines what is the real perpendicular velocity of the scattered primary particles of the field.
Further, for simplicity, we will assume here that the entire flow of the field eventually interacts with the disk and shifts when passing through the disk (and (on average) each particle g_1 interacts once), which simplifies the calculation of the perpendicular velocity of gravitons and suggests that the entire flow shifts uniformly at the average (instantaneous) velocity of the atoms.

From the condition of the problem, it follows that the disk with its mass and speed shifts 1% of the field from its plane and such part of the field is constantly outside the disk (not counting the start of rotation).

It is obvious that the field will shift in an unequal way depending on the radius due to the different speed of the atoms, which we will also ignore here and will consider only the average speed and the field shift as uniform relative that speed.

Despite the known data, the problem remains with almost all unknowns, with the exception of one critical nuance:

> with a known amount of loss/shift of the field (with all the simplifications introduced above), we can find the distance by which the field shifts in the perpendicular direction.

On the one hand, this is paradoxical formulation of the problem, because the perpendicular speed transmitted by the disk is known, but:

1. With such a behavior of the disk and the field, the field must completely shift from the disk and as a result give a much greater weight loss.
2. As already discussed in section 1.4 (Distance of action of the g_1 field), the distance of activity of the g_1 particles of the field is limited.

Thus, from the fact that, despite the large perpendicular velocity of the particles g_1 obtained when colliding with the atoms of the disk, only 1% of the field is displaced, the following conclusion can be made:

> the primary particles g_1 of the field perform work that affects the source only for the time during which they manage to cover a distance of 1% of the disk size in the perpendicular direction (despite having the speed in this direction of 100 m/s).

To calculate this time (t_{g1}), it is necessary to find the maximum displacement of the field, but it is only known that 1% is lost by its effect on weight loss.
Considering that the influence of the primary field depends on the distance traveled by the primary particles, which varies greatly between the particles of the displaced field (segment B-C in the diagram above), then ideally this can be correctly calculated in a complex way.
Here, for simplicity, we will assume that by the reverse influence (the amount of returned g_2 field from all directions of the shifted field), the center of this 1% of the field (relative to the entire shifted segment) is in the center of mass (which needs to be proved or simply calculated correctly) and, accordingly, the maximum perpendicular distance for a triangle ABC with a right angle in point B should be equal to three times the distance h (to the center of mass), and thus the total distance of the displacement of the field is l = 3h.
Since h = 1% of R, then:

$$l=3h=3\times0.5\times0.01=0.015 \quad \text{m} = 1.5 \text{ cm}$$

This is the distance at which the field does the work that needs to be accounted.
Accordingly, the useful time of work of the graviton is:

$$t_g=\frac{S}{V}=\frac{0.015}{100}=0.00015 \quad \text{s}$$

Despite the large initial perpendicular speed, when translating it into terms of the behavior of the field flux and field particles, the shift of active part of the field that has to be considered is made only by 1% of the disk size, or in this case by 1.5 cm (which equals to 0.00015 seconds of the movement time of g_1).

It is also obvious that the displaced field should increase the force of attraction outside the disk. But the problem here is that the actual distribution of the field outside the disk is difficult to determine, because:

(1) it is unclear what percentage of the field interacts with the disk,

(2) different instantaneous speed of movement of atoms and an increase in the disk area per unit of length of the radius with advance from the center

make the calculation of this part difficult.
But, on the other hand, it is obvious that by measuring the distribution of the change (increase) in weight outside the disk, conclusions can be drawn about the character of the interaction between the field and the disk and about parameters of the field by the distribution of the scattered field in space.

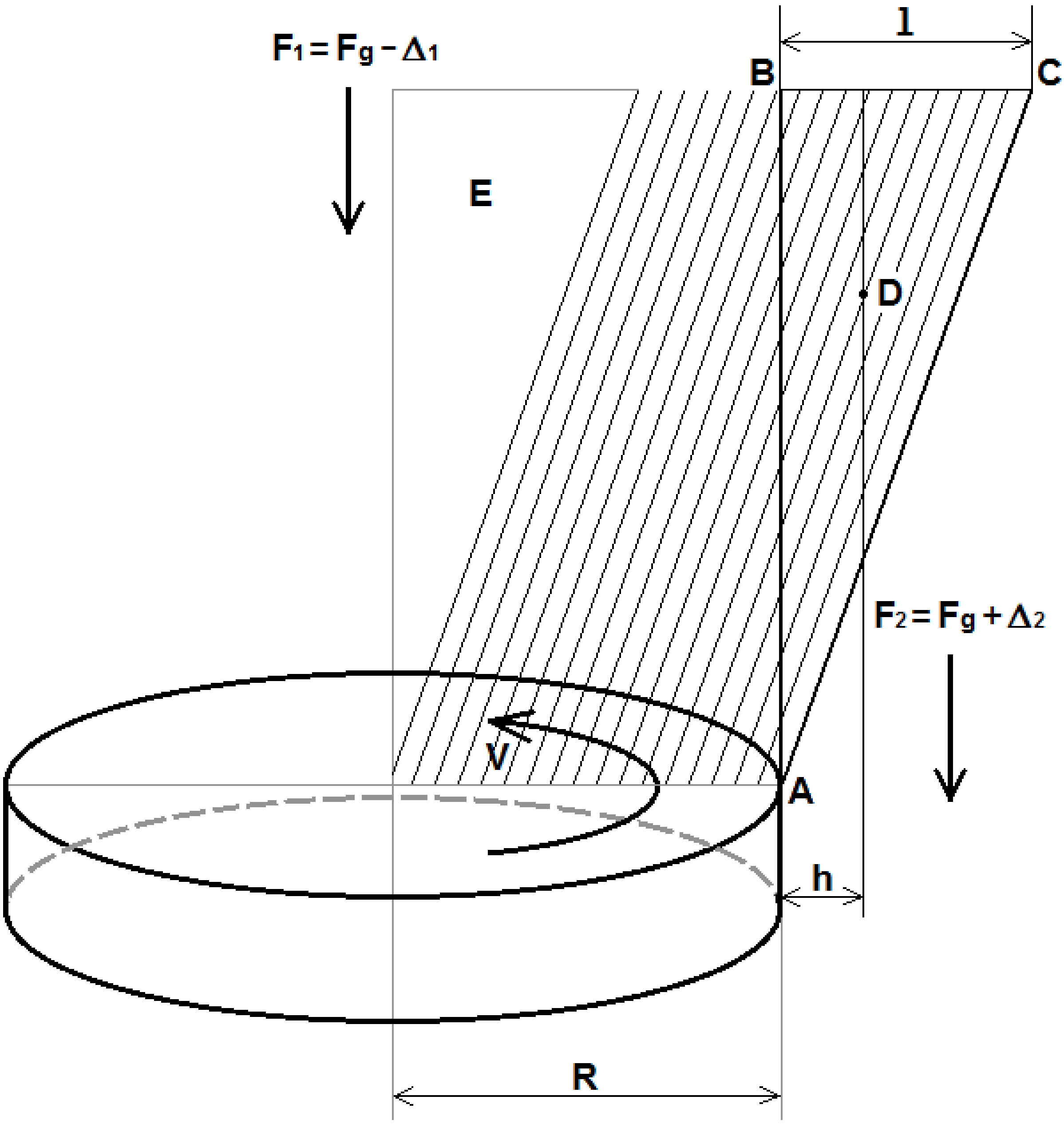

Figure 8-4.

Due to lack of sufficient data for analysis, we transition to the consideration of the rotation of the Moon.

Rotation of the Moon.

By the speed of the Moon in orbit (1023 m/s) and the already found value of the time of action of the primary particles of the field can be found the amount of field that creates uncompensated pressure in front, which creates axial rotation of the Moon.

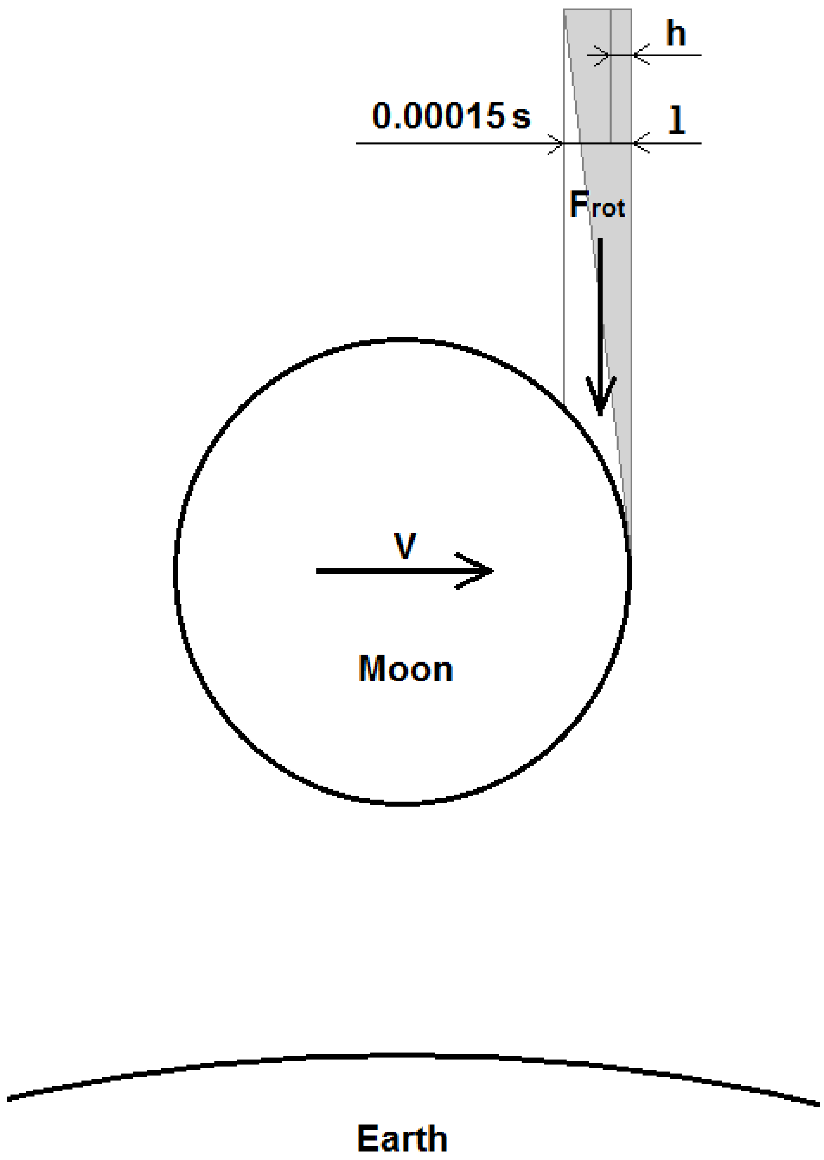

Figure 8-5.

Over 0.00015 s the Moon will pass:

$$S=V\times t=1023\times 0.00015=0.15345 \quad \text{m}$$

Given that the primary field is distributed here in a triangle (rather than completely filling the length l), and taking the calculation of the amount of such a field relative to the maximum distance l (at which it falls over t_{g1}) made during calculations with the disk (by the center of mass) as correct, then, similarly, in the reverse order this distance has to be divided by 3 in order to find the center of mass relative to the maximum distance of the field overlap, which makes it possible to consider h as

completely filled with a field (instead of a complex calculation of the influence of the field by the triangle).
From this:

$$h = 0.05115 \text{ m}$$

The following figure shows the pressure distribution of an uncompensated field on the surface of the Moon, which is a top view (from the side of the action of the specified force created by the field portion h in the part closed from the Earth) relative to the previous figure. (The thickness of the shaded area, relative to the horizontal straight lines, is the same across the entire height of the circle (excluding the highest and lowest points), although visually it looks like if it gradually decreases relative to the maximum thickness in the middle. This visual effect is caused by a gradual change in the angle of inclination of the segments of equal length to the surface the circle. If the distances between the horizontal shading lines relative to the surface of the circle were constant, then the color density would increase when moving from the middle and would reflect this nuance).

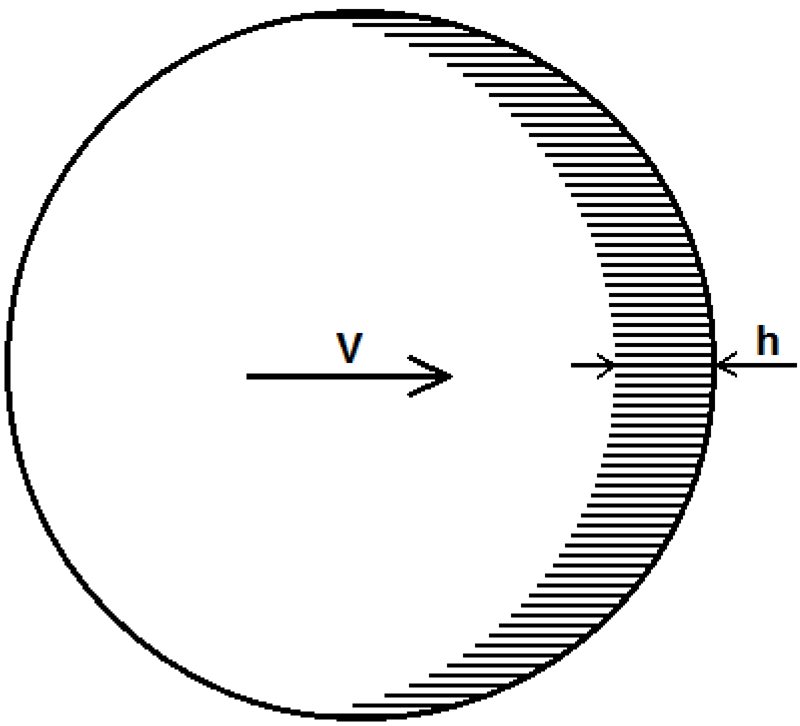

Figure 8-6.

The area on which the uncompensated pressure is distributed (approximately) is equal to:

$$S_h \approx 2Rh$$

what is calculated as the height of the hatched area multiplied by h, since h does not change along height, excluding the upper and lower edges, which are slightly non-linear (and which are in this case the approximation which indicated in the formula).

This uncompensated part of the field pressure is included in the total sum of the force of attraction acting on the Moon, and accordingly the force creating rotation can be taken as the entire force of attraction of the Moon (known from experimental data generalized by Newton's law) multiplied by the ratio of the absorption areas of the field:

$$k=\frac{S_h}{S}=\frac{2R_M h}{\pi R_M^2}=\frac{2h}{\pi R_M}$$

where R_M is the radius of the Moon.

$$k=\frac{2\times0.05115}{\pi\times1737}=0.00001875=1.875\times10^{-5}$$

Force acting on the Moon from the Earth:

$$F=G\frac{m_E m_M}{R^2}=6.6725\times10^{-11}\frac{5.9737\times10^{24}\times7.3477\times10^{22}}{3800000000^2}=2.028\times10^{20}\ \text{N}$$

where m_E is the mass of the Earth and m_M is the mass of the Moon.

From this the force of rotation is equal to:

$$F_{rot}=kF=1.875\times10^{-5}\times2.028\times10^{20}=3.8\times10^{15}\ \text{N}$$

By known rotational force could be calculated the parameters of the field that decelerate the Moon (with the force opposite to that found).

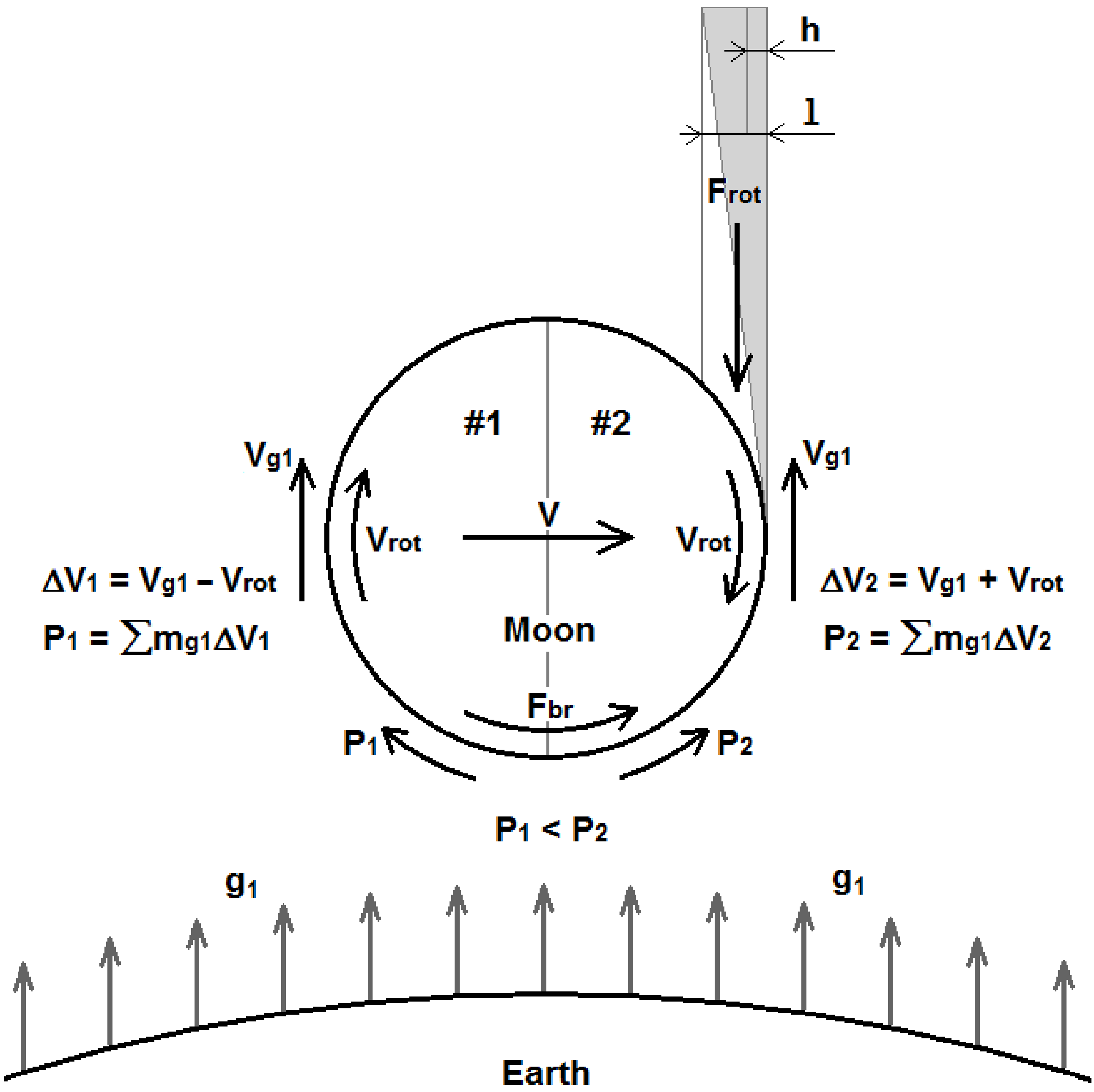

Figure 8-7.

Designations on the diagram:

V_{g1}	The speed of the primary particles of the field.
F_{br}	Deceleration force of the Moon (by the particles of the field).
V_{rot}	The speed of the axial rotation of the Moon.
ΔV	The difference in the velocity of the primary particles relative to the speed of rotation of the Moon (which is shown schematically in the formula, since the instantaneous velocity of the particles varies with the radius, or here can be meant the V_{rot} found separately for each particle used in the sum further). In the diagram, the speed difference is indicated separately for part #1 and #2 with the corresponding index.
ΔP_1	Change of momentum due to collisions with particles of the g_1 field of the Earth, which is transmitted to part #1 of the Moon and accelerates its rotation.

ΔP_2	Change of momentum due to collisions with particles of the g_1 field of the Earth, which is transmitted to part #2 of the Moon and slows down its rotation.

For the part #1:

$$\Delta V_1 = V_{g1} - V_{rot}$$

$$P_1 = \sum m_{g1}(V_{g1} - V_{rot}) = \sum m_{g1} \Delta V_1$$ – momentum which accelerates the rotation.

For the part #2:

$$\Delta V_2 = V_{g1} + V_{rot}$$

$$P_2 = \sum m_{g1}(V_{g1} + V_{rot}) = \sum m_{g1} \Delta V_2$$ – momentum which decelerates the rotation.

Because:
$P_1 < P_2$
then the total momentum decelerates the rotation.

Also here it is necessary to note two nuances that describe the same problem with different words:

1. The force of rotation F_{rot} consists of two parts:
   (1) maintaining a constant rotational speed,
   (2) counteraction to the decelerating force of the Earth's field.
   The formulas in the diagram and the reasoning above apply only to the second part/force.
2. The Moon is decelerated by two fields:
   (1) the field of the Earth,
   (2) own field, which has a complex distribution inside and increases the density to the center (and in fact can be the main field mass which decelerates the rotation of the Moon).

The expressions used in the paragraph #1 reflect a partial change of one of the most fundamental concepts in physics, known as Newton's first law, and also known in the history as confrontation of the views of Newton and Aristotle.

Technically, from the point of view of the law of nature (the only law of nature in the Theory of Everything), Newton's first law works for matter and space, where the particle will move indefinitely at a constant speed if it does not interact with other particles (as systems of nearby standing particles moving in one direction, which in this article are called g_2), but the problem is that neither Newton nor Aristotle knew about the Theory of Everything and single law of nature and formulated their laws for the bodies that we observe around.
Accordingly, the first Newton's law from the point of view for what it was formulated (for the bodies observable around) can be considered completely refuted.
On the one hand, the bodies not only do not continue a constant movement, but can create extreme braking forces and easily stop the rotation of such objects as a planet and the like. On the other hand, except when considering space objects, the deceleration force by the gravitational field is completely negligible if we consider objects on the surface of the Earth.
Aristotle formed his view on a fairly complete, logical and reasonable base, observing the deceleration of objects on the Earth's surface, where the obvious friction against the surface and water can make such conclusions controversial, but the deceleration by the invisible matter as air can already be directly generalized to outer space.

Accordingly, the paragraph #2 above is the usual formulation of the problem without taking into account the existence of other theories.

The secondary particles of the field are not considered above, but they also have a difference in speed relative to the sides of the Moon because they are radiated relative to g_2 and add up to their speed, and the reasoning for them is similar, but also taking into account the information given in (1.6).

Also can be considered the question of why the Moon does not stop rotation completely and why it rotates around the axis with exactly such speed.

Constant speed of rotation of the Moon.

The force F_{rot} creating rotation is constant.
Therefore, change (increase) of speed is also constant:
$F = ma$, where F = const, a = const
$V = at$, where a = const, V – varies linearly.

Graph of rotational speed versus time with a constant rotational force:

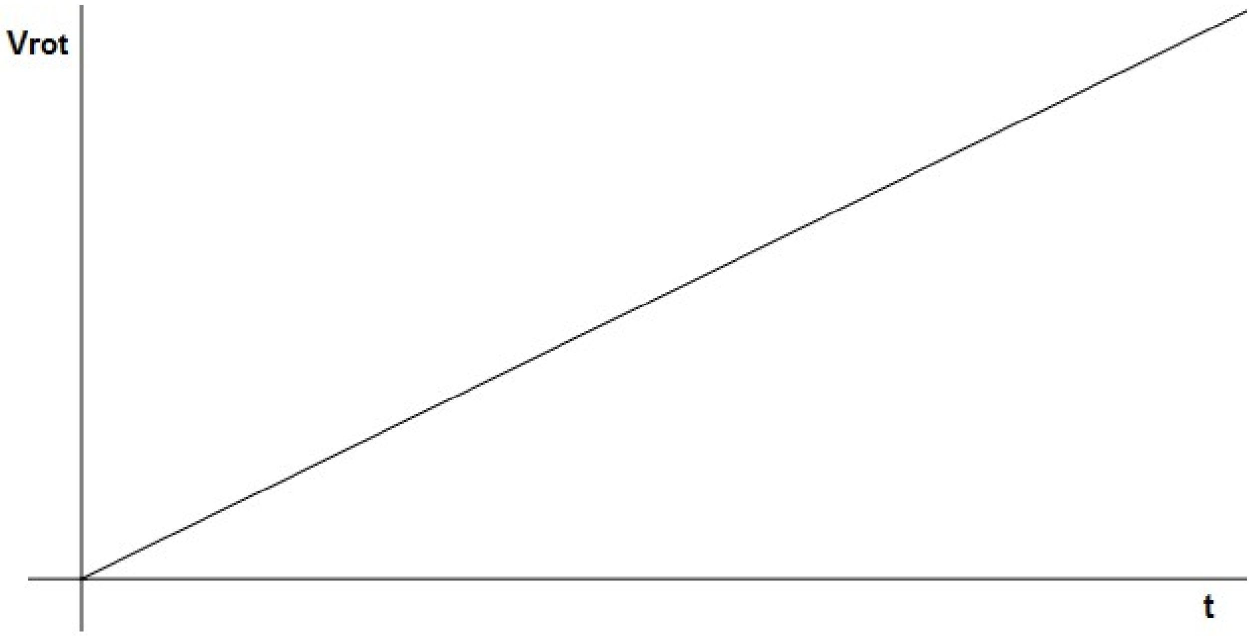

Figure 8-8.

V_{rot} – speed of rotation.

The braking force increases with increase of speed of rotation, because with increase of speed the amount of received momentum (P = mV) in the opposite direction increases. This dependence may be non-linear, but we will consider it as approximately linear, where the main thing is a reflection of the essence of the issue (increase in force with increase of speed of rotation).
Schematic graph of the braking force versus rotation speed:

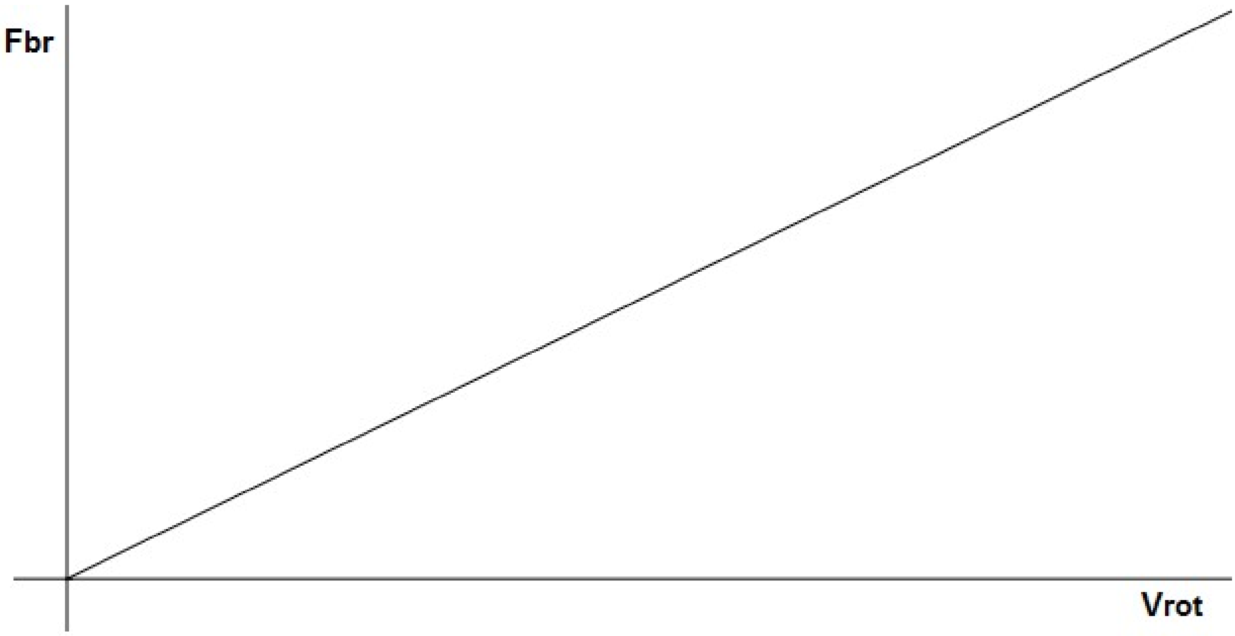

Figure 8-9.

F_{br} – braking force.
V_{rot} – rotation speed.

With a nonlinear change in acceleration, the change in speed also becomes nonlinear (exponential). A schematic graph of the dependence of speed on time under the action of a braking force, which also includes the dependence of speed on a rotational force, where the direction of velocities, as well as forces, are opposite:

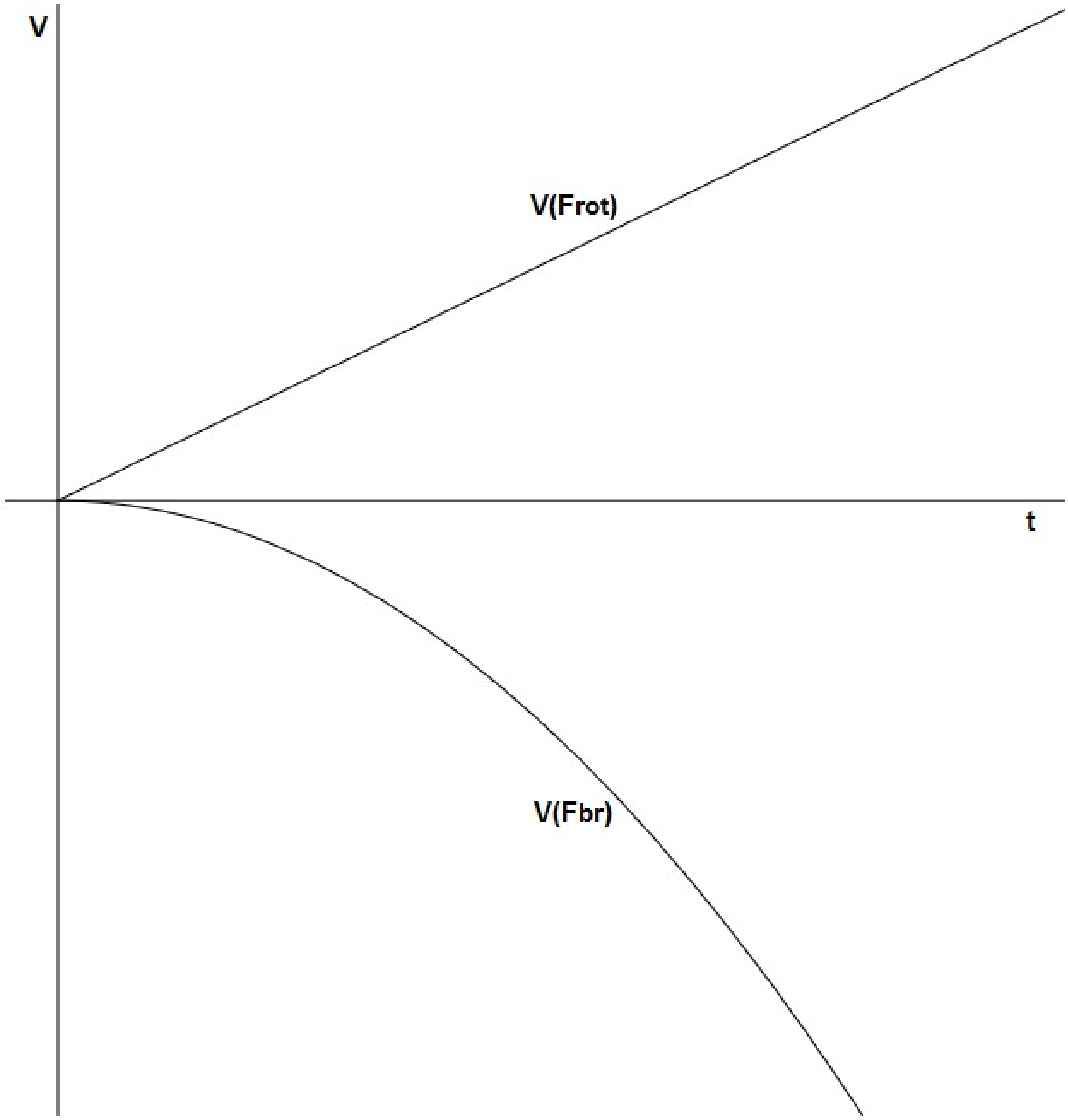

Figure 8-10.

The resulting speed V_r will be the sum of these interactions:

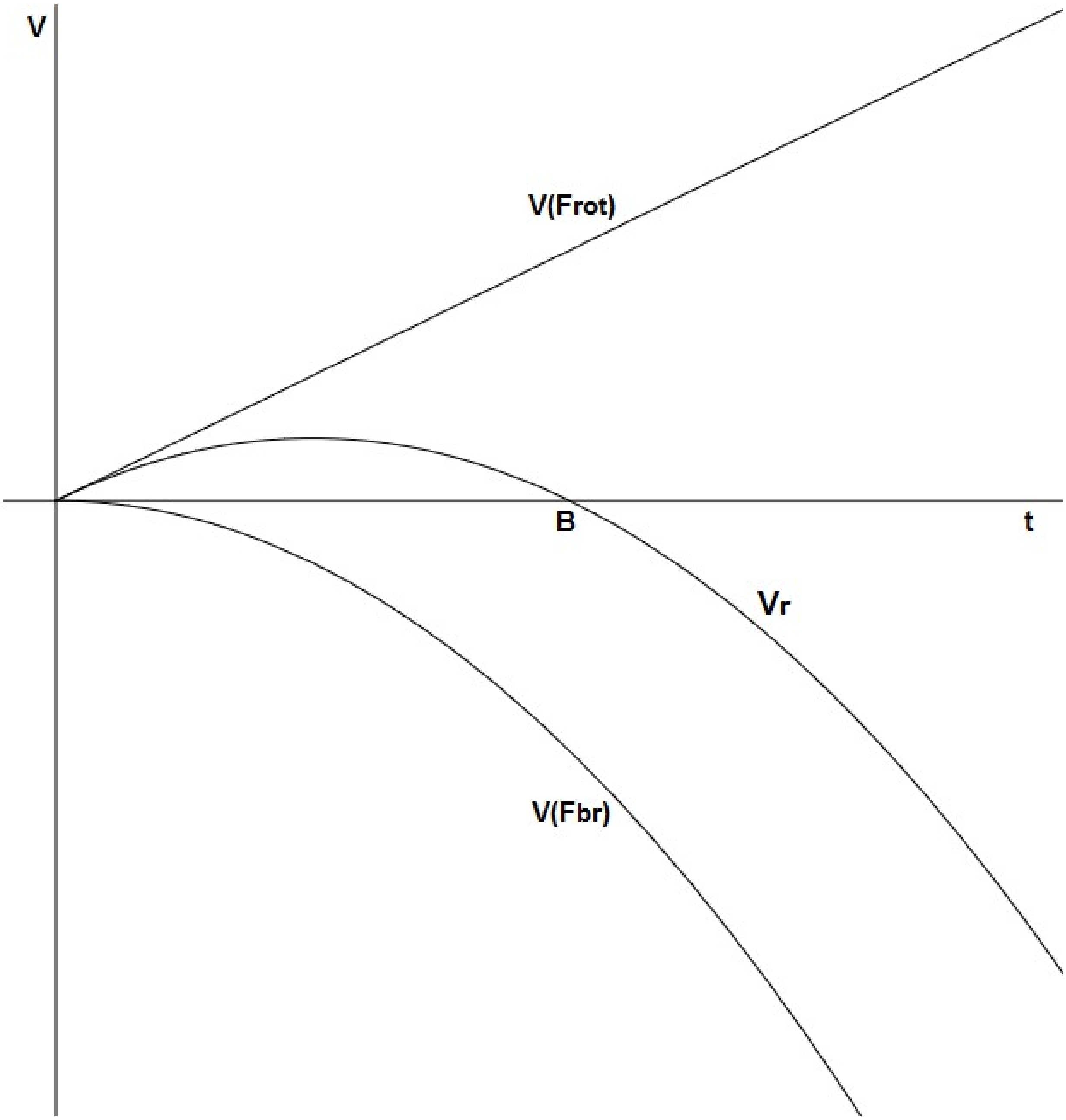

Figure 8-11.

By passing of the graph through the point B, it can be seen that the movement cannot stop if the graph does not converge smoothly to the axis *t*, which is caused by inertial force.
This can be seen on the combined graph of forces:

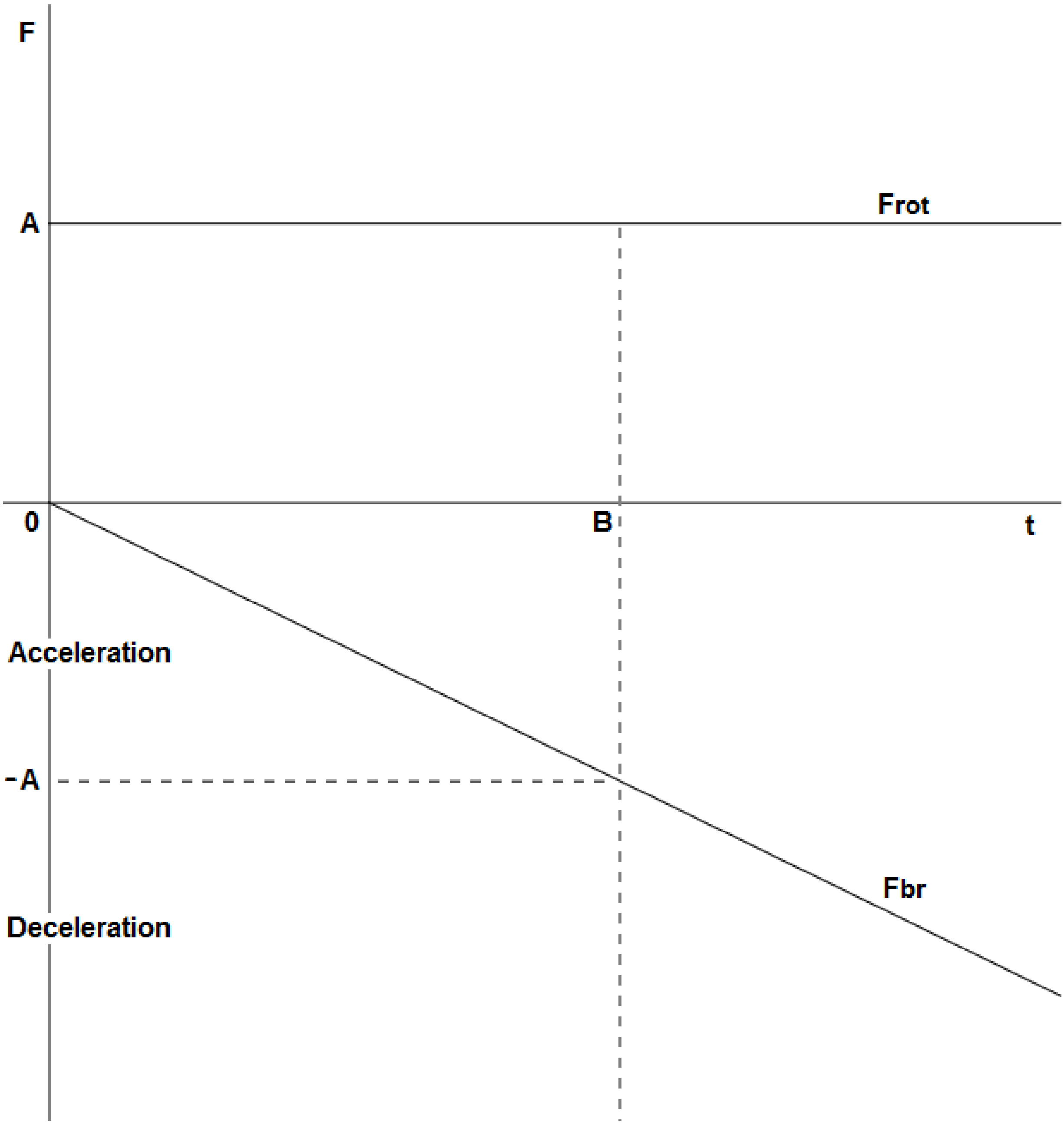

Figure 8-12.

where the point of change of direction of the resultant force (-A) is indicated, and there the acceleration changes to deceleration. Further, when reaching zero speed, the decelerating part becomes accelerating in the opposite direction.

Let's consider the process that presumably took place during the capture of the Moon (if at the time of capture the axial rotation was not exactly the same as during steady motion, which is unlikely). After the capture one of the braking-accelerating forces decreases, the second one increases, the rotation by inertia passes the equilibrium point and the process repeats, i.e. an oscillatory process takes place, which is damped by the force of gravity, what was considered earlier.

In this graph, the dotted line indicates the actual continuation of movement after passing through the equilibrium point where h_1 and h_{12} indicate the amplitude of oscillations.

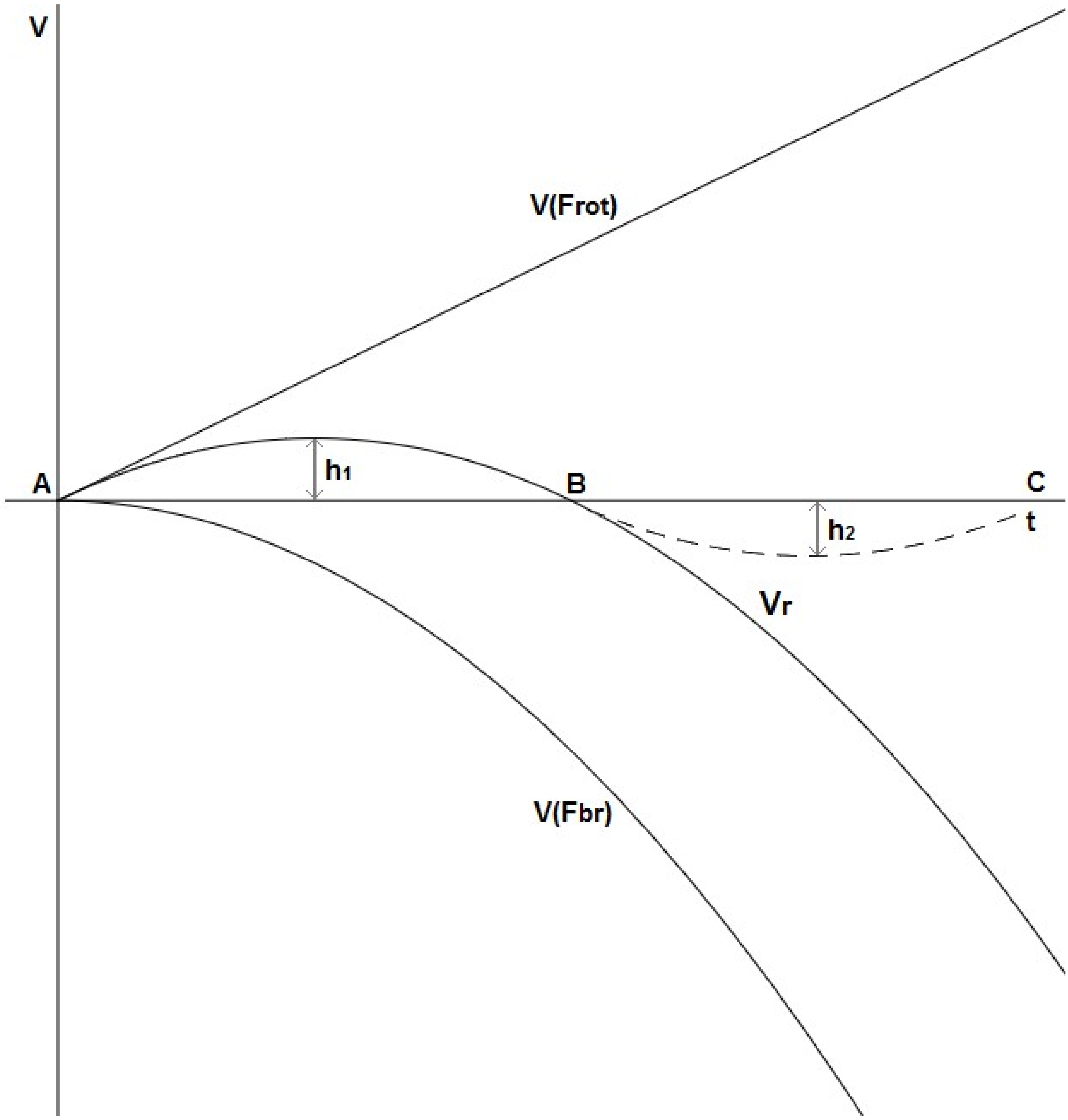

Figure 8-13.

The amplitude of oscillation is equal to:

$$h_{1,} h_{2,} h_{3,} \ldots$$

where, in accordance with the damping of oscillations:

$$h_n > h_{n+1} \quad , \text{for h} > 0.$$

The damping of the oscillations occurs at the equilibrium point between the deceleration force of the Moon by the field of the Earth and the Moon on the one hand, and the sum of the rotational force of the field of the Earth and the force of inertia of the rotational motion of the Moon on the other hand.

This end the section of calculations.

The author would happily continue, but he is not a physicist by education and does not have enough knowledge and experience to calculate such things efficiently.
The author is a programmer.
I like to compose logical schemes of interactions, but further physicists are needed.

Then, first of all, it would make sense to find the speed of motion of the primary particles of the field, which seems to be the simplest by analyzing the motion of stars in galaxies, especially in spiral ones, and also by the position and motion of isolated stars could be drawn conclusions about distance of action of g_1 particles relative the source.
The main key should be that the connection between the stars in the structure of the spiral galaxy is distributed along the arms because there is either no attraction from the center, or there is no significant attraction, where the bend of the galaxy arm possibly could be considered as occurring mostly under inertia at the end of the arm (with the distribution of attraction along the arm), and not due to attraction to the center.

It should be noted here that the speed V_{g1} and V_{g1} are not interconnected (apart from the fact that V_{g2} is added to the speed of the graviton that released the particle g_2) and are determined solely by the internal properties of the system that emits them.

Also it is necessary to mention here observations of various speeds of light from various stars (exceeding the maximum limit of speed accepted in physics today). Some time ago, the description of such observations could be freely found on the Internet, which were based on simple geometric conclusions and their accuracy was not in doubt, and also such articles were sometimes supplemented by references to attempts to explain this "phenomenon" from the standpoint of relativism, but eventually with time both the description of such observations and of relativistic explanatory attempts disappeared from the Internet, but, nevertheless, such observations are very important data about the behavior of the gravitational field, its influence on the outgoing flow of heavier particles (in this case photons, but this should also relate to other particles in the entire spectrum of the emission), and also shows the character of such dependencies and parameters of the gravitational field (and other emitted particles) on the parameters of the star.

9. Theory of gravity on the surface of objects.

Let's analyze the impact of

(1) gravitational permeability and

(2) the shape of the object

on the force of attraction of objects on the surface of the Earth.

Small objects:

1. Have a large gravitational permeability, especially by the field g_1, where we can say that they are almost completely permeable.
2. The permeability by the g_2 field is present, but not complete, and it changes noticeably with changes in the geometry.

One of the first questions that arise (based on the mechanics of gravity):

How to position arrange the object to make the force of attraction minimal or maximal?

Since in this case everything is strongly dependent on the absorption area of the reverse g_2 field flow, it is obvious that by increasing the thickness of the object in the direction of the flow of g_2, we kind of hide the atoms of the object behind each other (even if not perfectly, but partially) and thus reduce the area of field absorption, and as a result, the weight of the object must change. The inertia force of the object in this case does not change, because the atoms are connected through their own field, and even if you pull/push part of the object, it will pull/push the whole object.

These questions are interesting because:

(1) from the point of view of the mechanics of gravity considered earlier, the force of attraction depends on the absorption surface of the field,

(2) and at the same time, in accordance with what we observe on the surface of the Earth (what is described by the law F = mg), there is not only no dependence on the form, but also the law of attraction is completely different compare to the formula $F = G\frac{m_1 m_2}{R^2}$.

Let's consider a scheme with cases where the object on the right has all the atoms arranged horizontally, and the object on the left has an overlap of atoms relative to the flow of the field g_2.

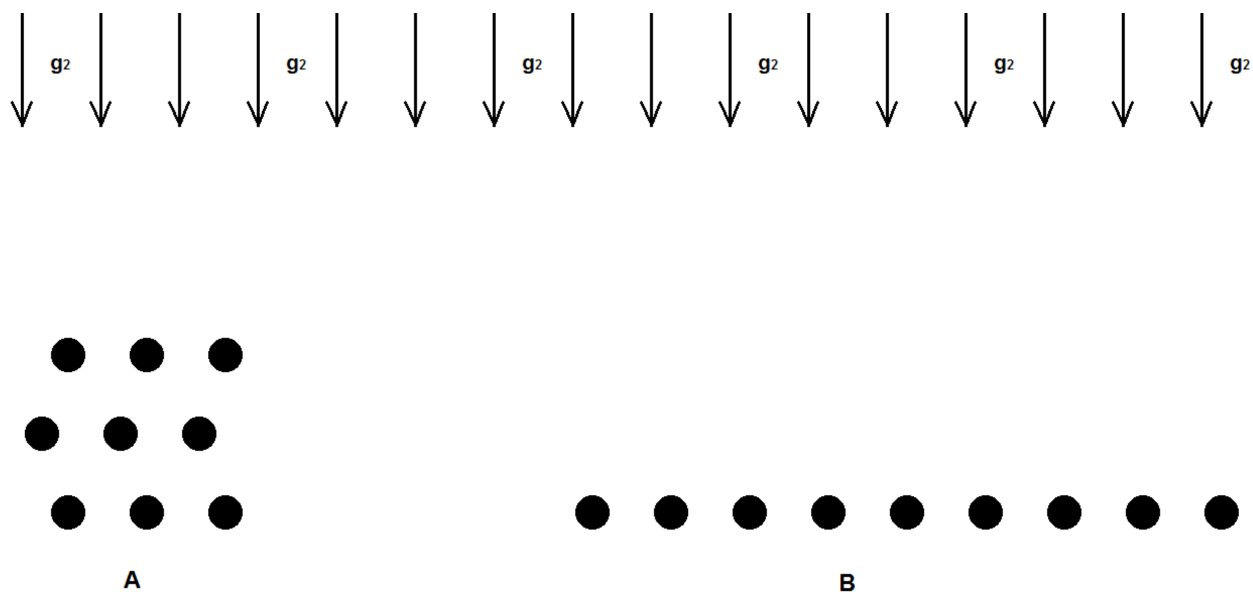

Figure 9-1.

It is obvious that the object on the left has a loss in absorption area due to overlapping of atoms, which means the loss of a part of the momentum received from above, and the loss of a part of the attraction force compared to what the object on the right receives, and its weight should be smaller.

In reality, such an effect on the surface of the Earth was not detected, but based on the scheme above, it should not only exist, but it should be very significant in its influence on the force of attraction.

Let’s consider the difference between gravity on the surface and gravity for space objects in order to find out the details of this process.

Space objects:

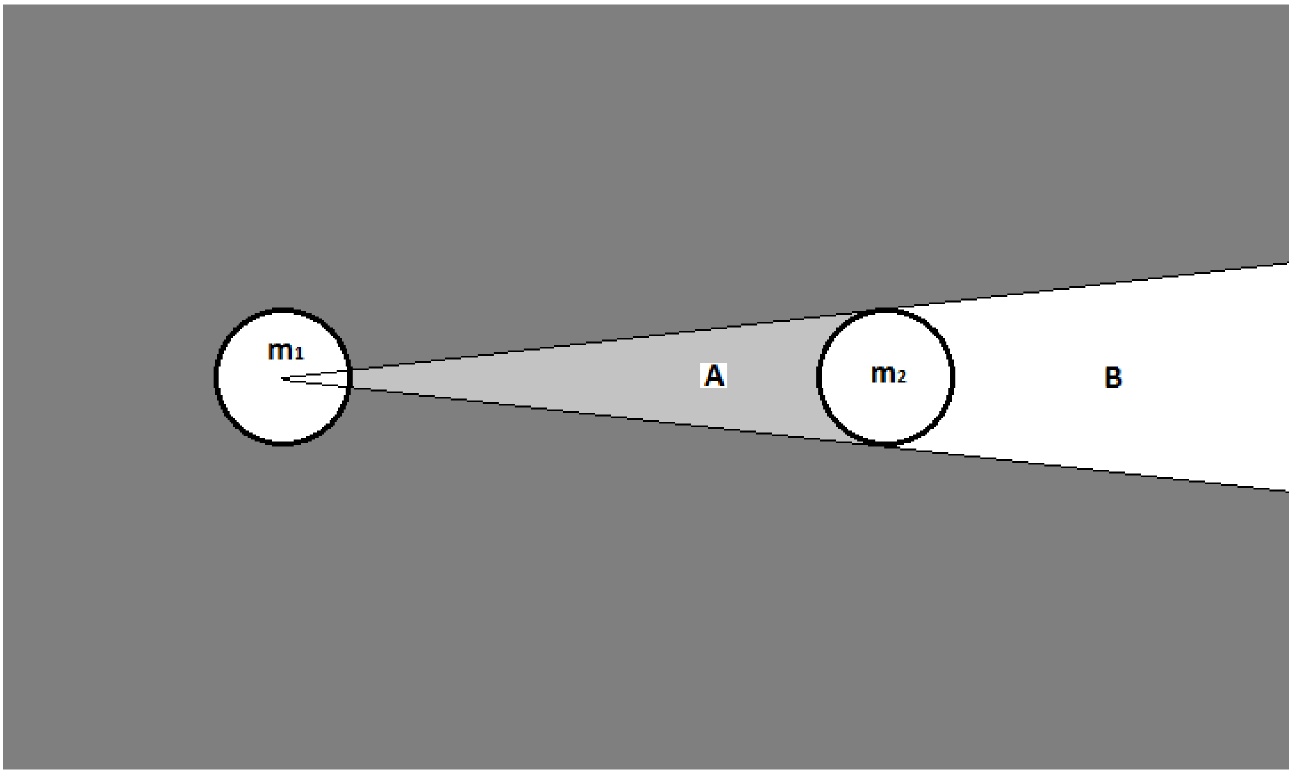

Figure 9-2.

Object on the surface of another large body:

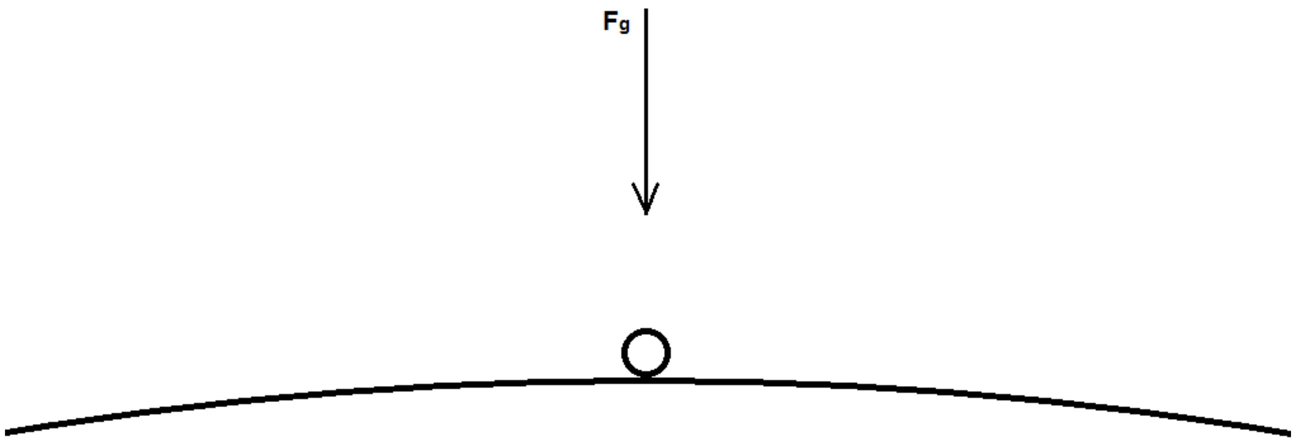

Figure 9-3.

The main answer lies in the field directionality, which was already repeatedly mentioned during consideration of gravity for space objects, including consideration of the directionality of radiation from the surface shown in the following scheme:

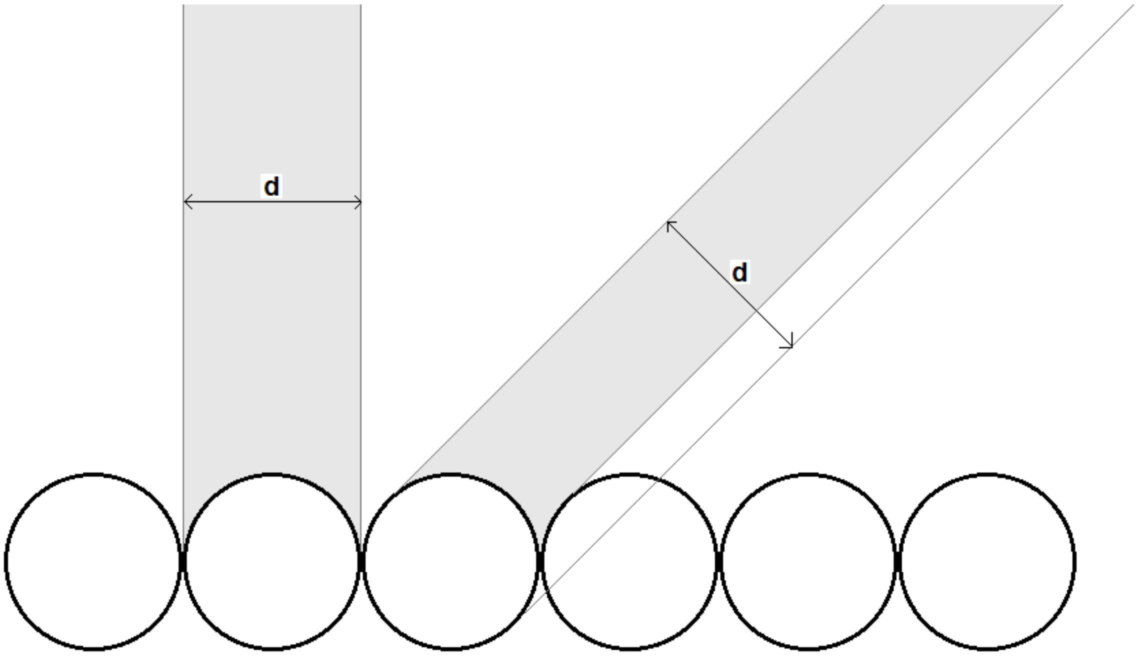

Figure 9-4.

Radiation in a "non-primary"/non-perpendicular direction, although is reduced due to interference, but it occurs in a substantial way.

It is also obvious from the behavior of the g_2 field that the field is emitted by g_1 particles in all directions.

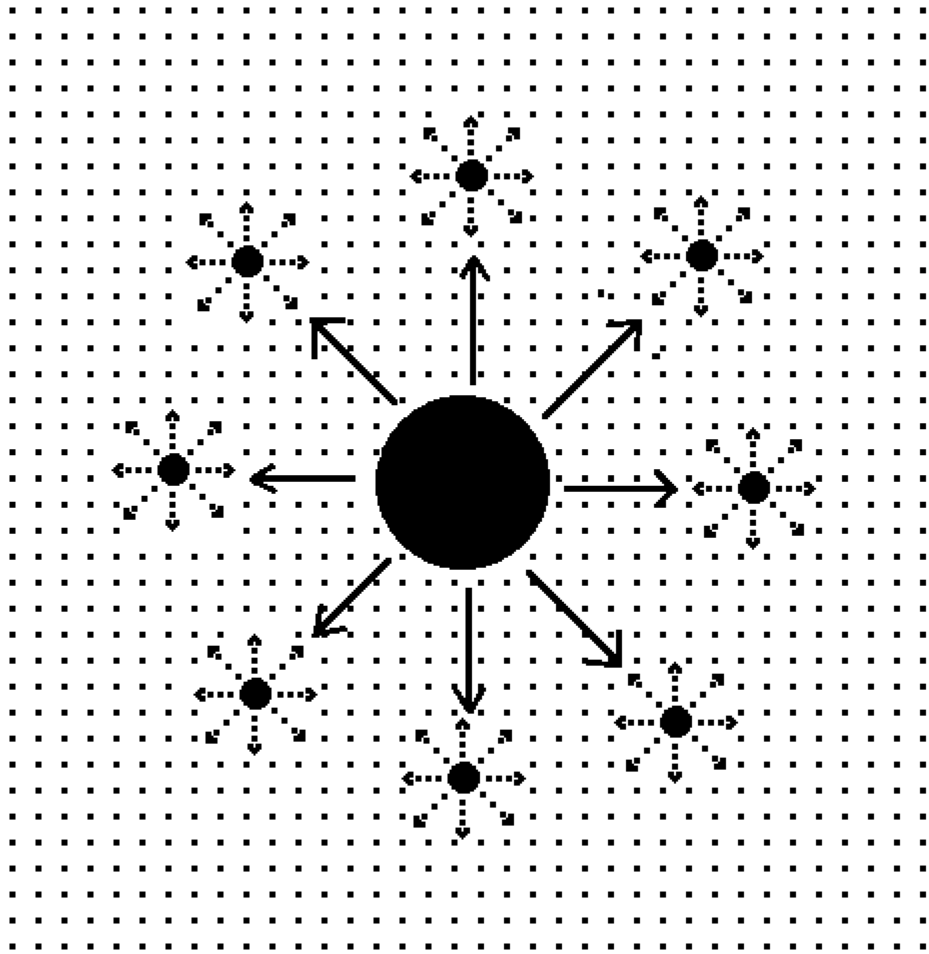

Figure 9-5.

An example of the total reverse effect by g_2 particles on a single point by the g_1 flux emitted from various points of the surface is shown in scheme 1.5-4 (in section 1.5).

Accordingly, the flow of the field is directed to an object on the surface of a large body in the following way:

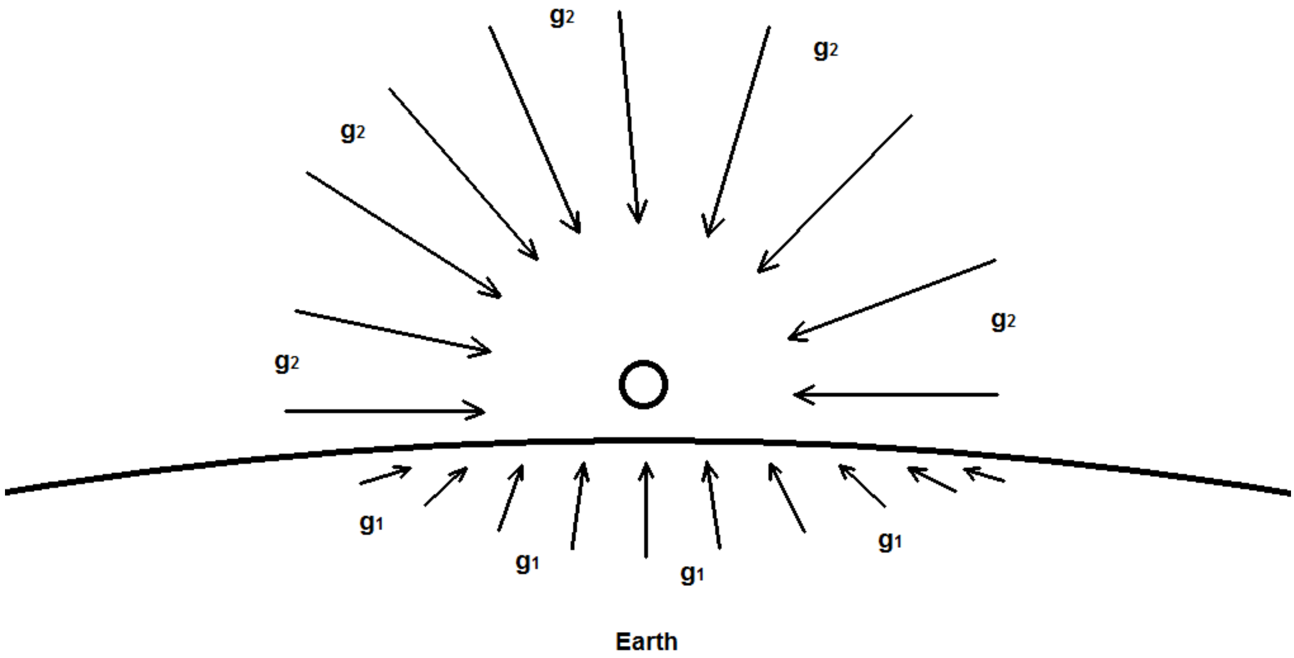

Figure 9-6.

This gives the following effect of the shape of the object on the force of attraction:

- with almost uniform pressure on the object from all sides and
- large gravitational permeability of the object

the shape of a small object becomes a negligible parameter affecting attraction, which follows from the fact that strong screening of atoms relative to the chosen direction (and a decrease in pressure force from this direction) with increasing thickness in this direction greatly reduces the thickness and increases the absorption area of the field from other directions, and thus, regardless of the geometry of the object, the average pressure from all sides will be approximately the same.

This is the main critical difference between gravity on the surface and gravity for space objects, for which the main influence is created by directional flows (in the direction of influence), which retain their directionality over long distances.

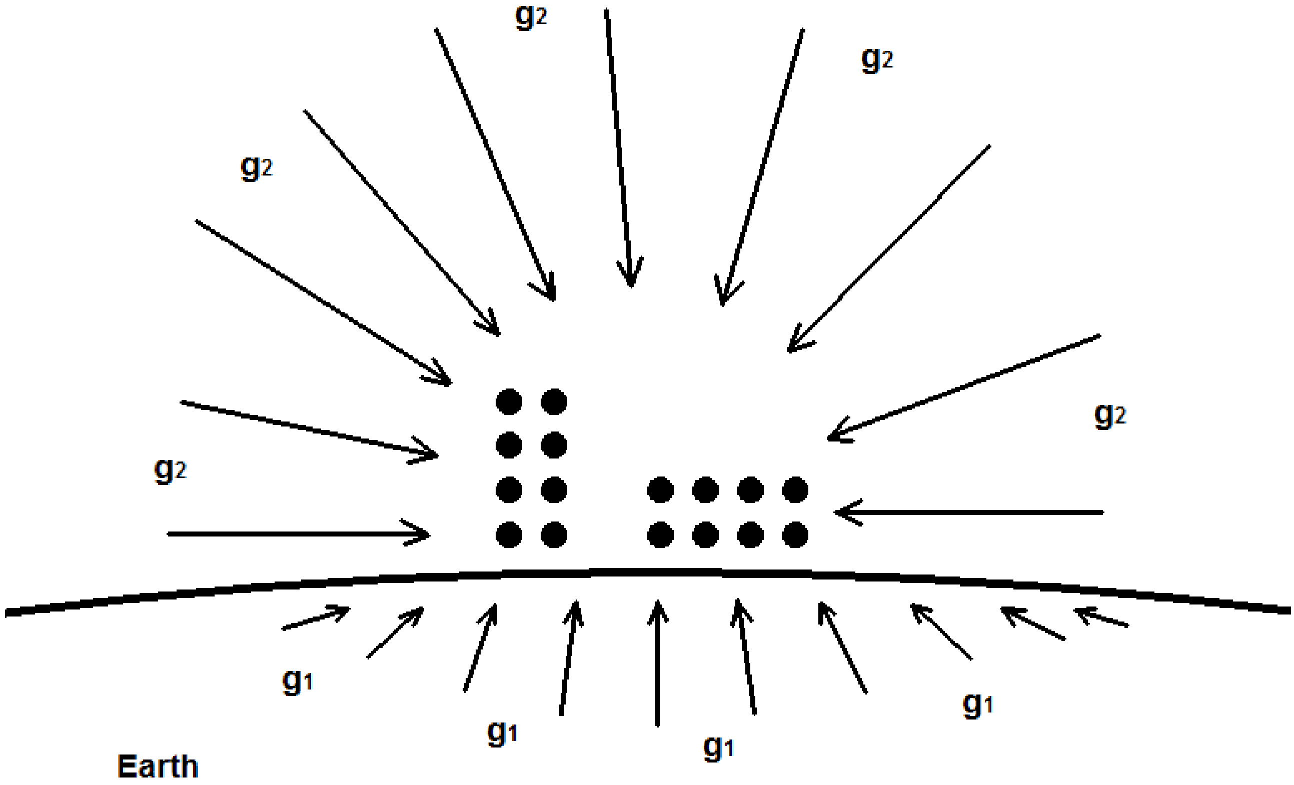

Figure 9-7.

For large objects as a planet, the total work of the field g_1, and the backward pressure of the field g_2 created by it from above (from all directions indicated above in the diagram) is an enormous force that would instantly crush any molecular/crystalline structure on the Earth's surface.
In reality, we observe:

1. The value of the attraction force (F = mg) which is almost completely negligible compared to the total field pressure on the surface from above (created by the work of particles g_1 when flying away to infinity).
2. The integrity of objects on the surface.

Considering points 1 and 2 above, as well as the fact that:

> in the upper gravitationally permeable layer of the Earth, there is absolutely not enough space to create a pressure by g_2 particles which would compensate pressure by g_2 particles from above,

we come to the following conclusion:

> the compensating pressure from below must be created by the outgoing flow g_1 (together with the supposedly negligible flow g_2 in this case).

The actual amount of outgoing g_2 flux (relative to g_1) is not currently known, since the dynamics of radiation and propagation of the field by large objects has not been studied, but it should be negligible or insignificant with respect to g_1 because otherwise already proven (and obviously the only) gravity creation scheme would not work, which proves the minimality of the outgoing flux g_2 relative to g_1.

Flux g_1 and g_2 differ significantly in the way they pass through the substance (where the flux g_1 can flow like a gas going around the atoms (by pushing off from them)), but as a result, they almost balance each other by the action on the object on the surface and create a small difference in the total force (compared to the forces created by these flows separately) directed downward.

The fact that the pressure is compensated from all sides (apart from the negligible total uncompensated pressure directed downward/toward the center, which is the attraction force on the surface) is the reason that such field fluxes do not crush the structures of the substance on the surface (like molecules, crystal lattices, objects).

Let's consider the distance that the g_1 field flies from different points of the Earth's surface and how this affects a specific point on the surface.

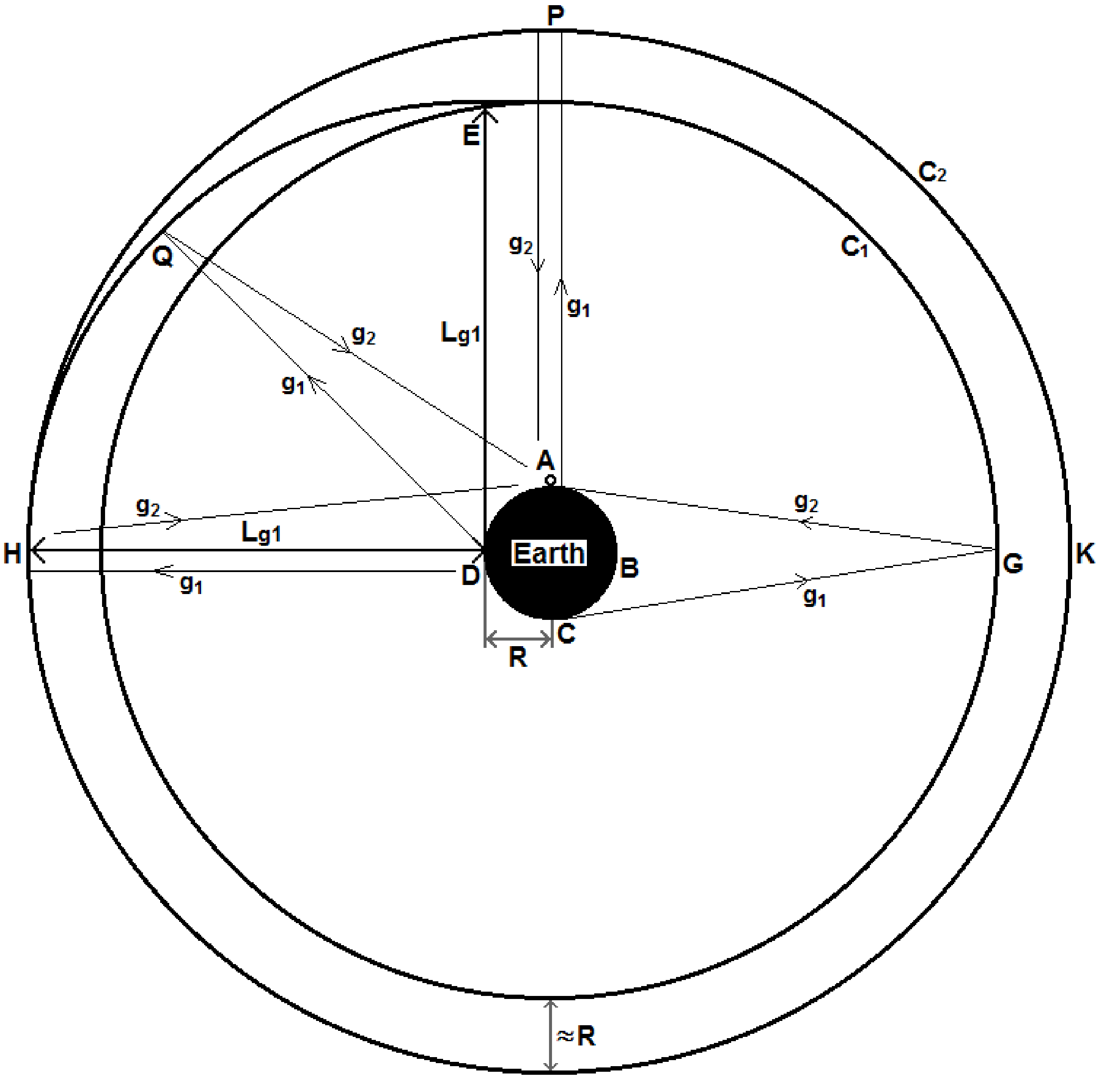

Figure 9-8.

Designations on the diagram:

A	a point indicating the position of an object on the surface of the Earth.
R	Earth radius.
Lg1	the maximum distance at which the particle g_1 flies off while acting on the radiating body (discussed in section 1.4.1).
C2	a sphere with a radius indicating the maximum distance at which particles g_1 fly away from

	the Earth's surface, where only g_1 emitted perpendicularly from the Earth's surface act from this distance.
C_1	a sphere with a radius of $\approx(L_{g1} - R)$ indicating the minimum distance at which act particles g_1 which fly away from the surface of the Earth.

Next has to be found:

(1) the sum of the field g_2 acting on a point/body A from all directions,
(2) created by the field g_1 emitted from all points of the sphere of the Earth.

For this have to be considered all points of radiation on a sphere and how they act on point A.

The field emitted on the surface from point A (and its surroundings) creates the maximum effect because it is the only point where there is a perpendicular outgoing flow that will be included in the sum without taking into account the angle.
The radiation at point A must be summed from the straight line AP to perpendicular directions relative to AP along hemisphere, taking into account the radiation angle, where in the direction perpendicular to AP the radiation tends to zero. Tends to zero mathematically. Given the gravitational permeability, this angle will probably be a little larger than 90 degrees, possibly up to the direction AG.

When advancing down the sphere from point A, the influence of the field decreases, since all directions affecting point A must already be taken into account with an angle of action that reduces the force.

The most distant point, which returns a reverse flow to point A with a perpendicularly emitted g_1 flux, is located on the sphere of the Earth perpendicular to point A at points D and B.
The arc H-E indicates the distribution (maximum distance) of the g_1 field from point D (upper part of the emitted field, which acts as a return flow in the direction of point A), where Q indicates one of the directions (and distance) acting from point D to point A.

The point C mathematically (in terms of geometry) cannot return the flow to A, but the points tending to C return some non-zero flow indicated on the diagram by the C-G (g_1 flux) and G-A (g_2 flux) directions. Physically, point C may also return some negligible flow due to the presence of gravitational permeability, creating a direction similar to C-G and G-A.
Also for the case of particles emitted from point C, it should be noted that the sphere radius C_1 will be slightly smaller than L_{g1}, though by a negligible value when compared with the distance L_{g1}.

The main conclusion to this moment regarding the effect of the radiated field on an object on the surface is as follows:

> the maximum effect of the uncompensated field emitted from the entire surface of the body on a point on the surface of this body does not exceed the work of the field g_1 enclosed between spheres C_1 and C_2.

Let's draw on the volumetric graphs the radiation regions and the force acting on a point on the surface.
In the following schematic graph, black shaded region indicates the amount of the field emitted from the corresponding points on the surface, which acts on point A.

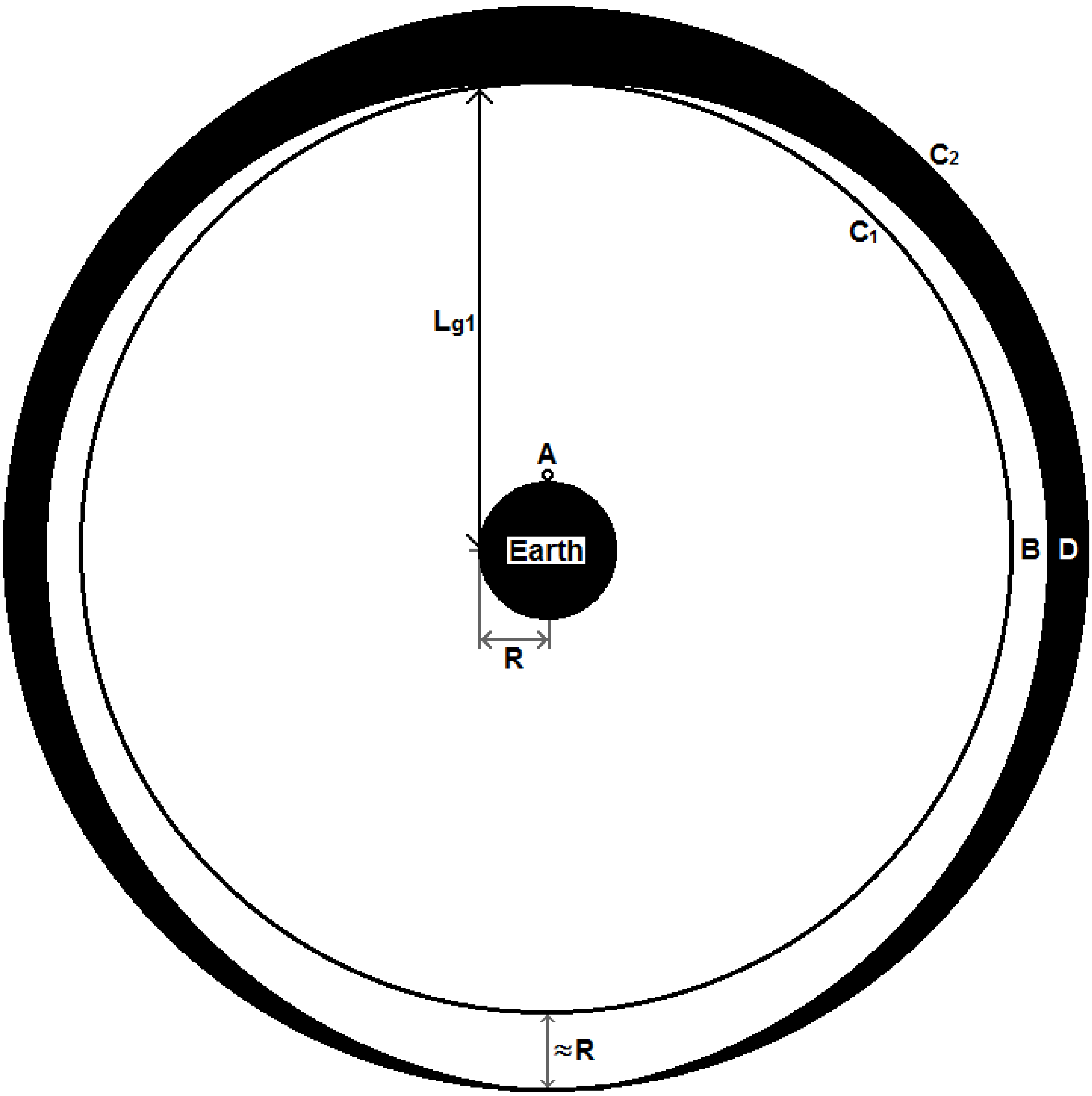

Figure 9-9.

At the same time, the field itself, accounted on the graph above and radiated from the indicated points on the circle, spreads to the upper part (depending on the angle) and from there acts on point A.
The distribution shown on the graph is schematic and in reality it will probably decrease from top to bottom much faster, and not evenly, as indicated in the figure.

The following diagram shows the field affecting point A not relative to the emission points, but relative to the points from which it affects the point A having spread in space from the emission points.

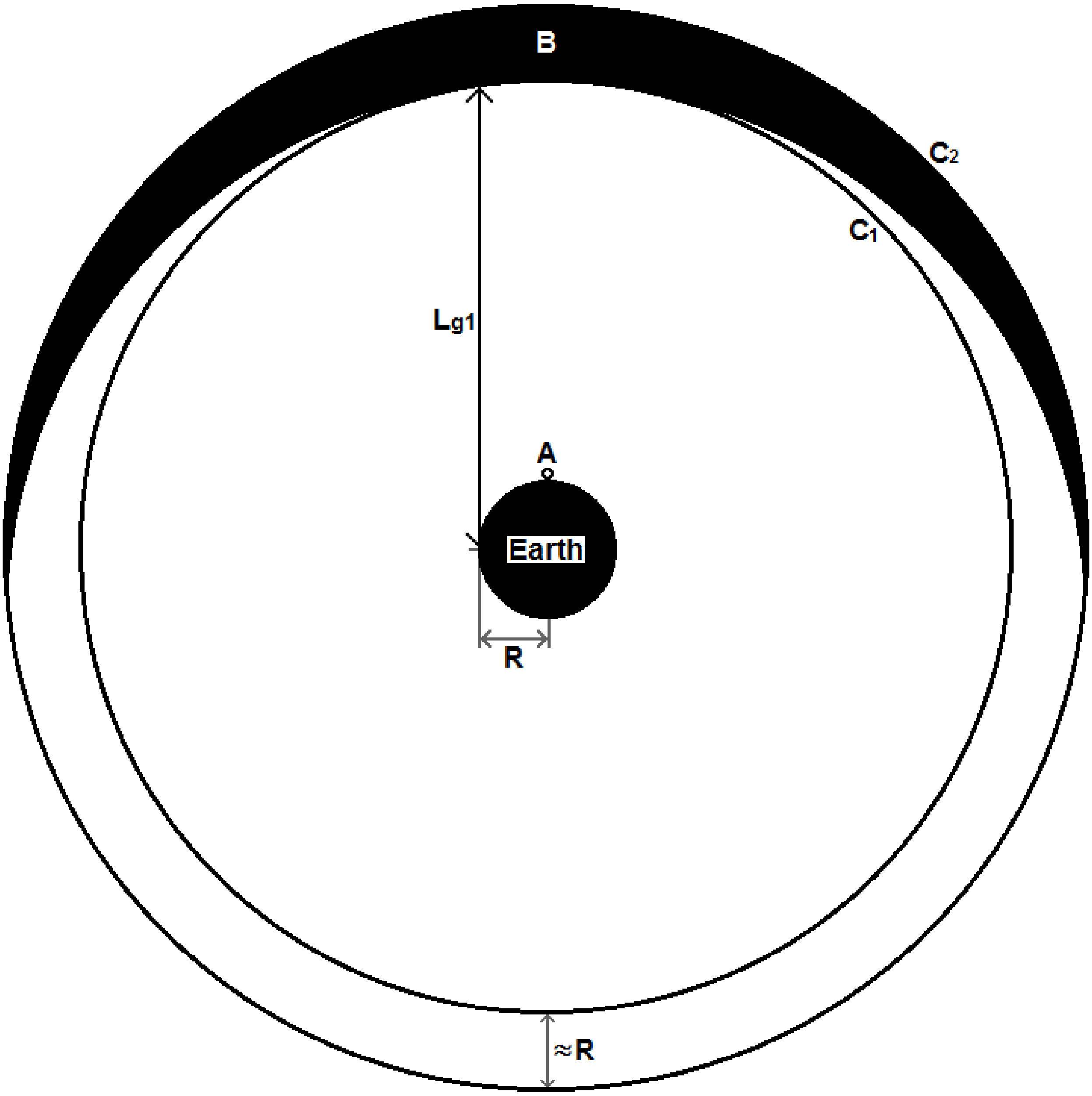

Figure 9-10.

The next step for visualization of gravity on the surface of the body is to collect all the field highlighted above on the sphere into single connected area and combine it with point A, so that it reflects how it affects it from space.

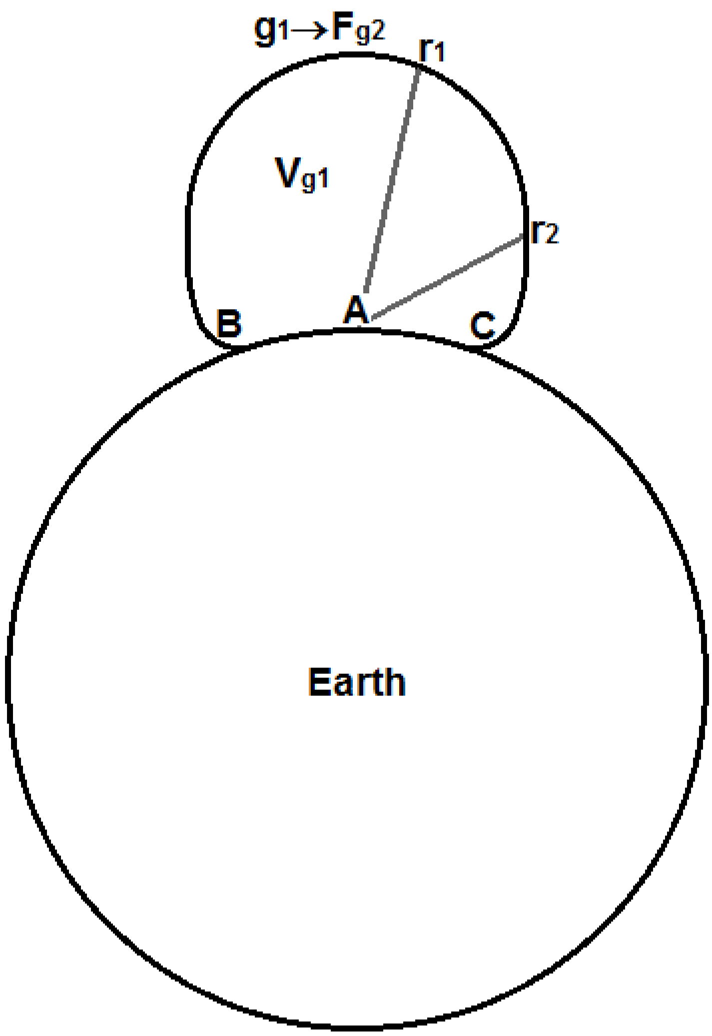

Figure 9-11.

In the figure above, the region V_{g1} is the volume of space with the field g_1 (relative to the entire space with the field generated by the body over the entire sphere) which creates an uncompensated pressure by the g_2 field for point A.
The inscription $g_1 \rightarrow F_{g2}$ indicates that the region was distinguished by the presence of particles g_1 but the real pressure (force) from this region is created by the particles g_2 that it generates (= by the work of the field g_1 in that region).
The length of the vector *r* drawn from point A to the contour of this region shows the ratio of the number of particles g_1 in this direction.
To recalculate the particles g_1 into force, it is necessary to consider the work of all particles g_1 in the opposite direction, which will give a graph for the forces different from the contour of this area, which is the spatial graph of the field quantity.

Regions B and C are marked on the graph to show the roundness of the connection with the Earth, which corresponds to the continuity of the original graph at the figure 9-10 (smooth reduction of the thickness of region B from the maximum to the minimum value).

In fact, the graph above, indicating the volume of the field, should probably make sense only if we take into account the unevenness of the field density with distance from the center.

Comparison of forces of the field on the surface.

Let's calculate the level of forces created by the field components at the surface and compare it to the uncompensated part.

Let's calculate the force that acts on an object on the surface by Newton's formula, which generalizes the behavior of cosmic objects.

Earth mass = 5.972×10^{24} kg.
m_2 for the moment is about 85 kg.
The distance to the Earth is equal to the thickness of the shoe sole and is approximately 1 cm. On the one hand, it is not quite clear how to take this distance correctly, but considering that immediately after the specified distance the interacting substance starts on both sides, then we keep 1 cm for this comparison.

$$F=6.67408\times10^{-11}\frac{5.972\times10^{24}\times85}{0.01^2}=3.39\times10^{20}\ \text{N}$$

Newton's formula for space objects summarizes/takes into account practically only one component of the mechanics of gravity (discussed in 1.2) which is pushing yourself with your own field, where only the pressure of the secondary field is involved.
The formula $F=G\frac{m_1 m_2}{r^2}$ approximates the force of the g_2 flux at a given distance from the Earth.
From this it follows that the force of the outgoing flux is equal to the force of the incoming with subtraction of the uncompensated part of the g_2 field considered in this section, which is generalized by the formula F = mg:

$$F_{g2}=G\frac{m_1 m_2}{r^2}$$

$$F_{g1}=F_{g2}-mg=G\frac{m_1 m_2}{r^2}-mg$$

The force of the uncompensated part of the field:

$$F_g=mg=85*9.8=833\ \text{N}$$

Accordingly, the ratio of the uncompensated part of the g_2 flux to the full/compensated is:

$$k=\frac{F_{g2}}{F_g}=\frac{3.39\times10^{20}}{833}=4.0671\times10^{17}$$

It is obvious that the difference between the forces created by the outgoing and incoming flows of the field, which gives the force pushing objects on the surface to the Earth, is almost completely negligible compared to the strength of each of the flows separately.

If we consider that the Earth’s field, even at huge distances and with a corresponding decrease in the density and field strength, can hold and rotate objects such as the Moon, then the data about real forces and densities of gravity flows on the Earth’s surface becomes more obvious.

In fact, we, and the objects around us on the surface (as well as the upper layer of the Earth), are almost completely transparent and inconspicuous fluff for the gravitational field (which for small objects is primarily due to its small size, and for relatively large ones (as the upper layer of the Earth) due to small size (which is thickness in the example with the layer of the Earth) and a large gravitational permeability).

The influence of the shape of an object on the force of attraction.

In order for an object to have a minimum weight, it is necessary that the number of closed atoms in all directions of the uncompensated field should be maximum (the average absorption area of the field from all directions of pressure g_2 should be minimal), for which the object must presumably repeat the shape of the uncompensated field as much as possible (or perhaps more correctly, not the form of the uncompensated volume of the field g_1, but the form of the volumetric graph of the forces created by it).

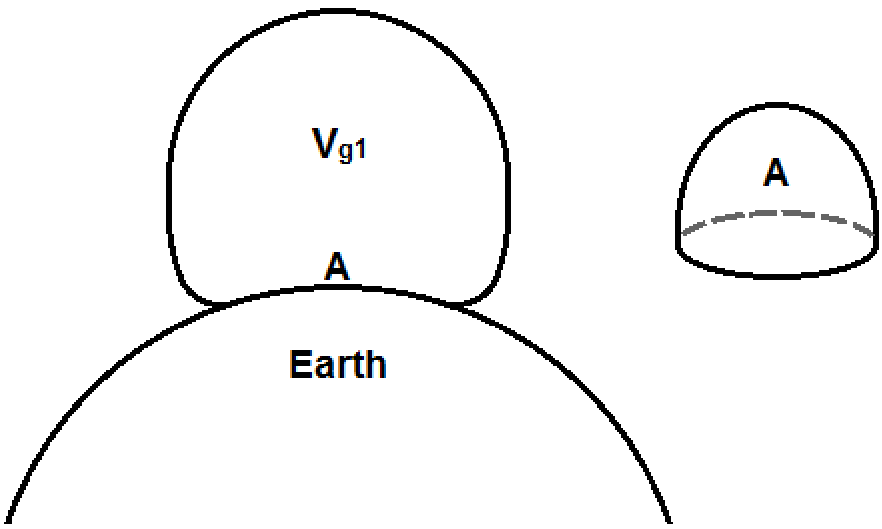

Figure 9-12.

In order for the object to have a maximum weight, it must make the absorption area (for all directions of g_2 field pressure) maximum, which is supposed to be achieved by the same form of the object, but it must be empty inside and have as thin wall as possible.

Which of the following objects will be attracted to the Earth with the greatest force, assuming that (1) they contain the same number of atoms of identical composition, (2) the needle and the ball are completely filled inside?

Figure 9-13.

Let’s arrange them in order of proximity to the form with the smallest average surface of absorption of the field:

1. Ball.
2. Needle.
3. Feather.

Thus, with minimal force is attracted to the Earth the ball, then goes the needle, and the feather is attracted with maximum force (due to the maximum area of field absorption and the maximum received pushing to the Earth momentum from the field).

This effect has actually been used in practice for a long time, only in relation to flows of particles other than gravitational.
For example, some satellites launched to fly from the solar system, open an umbrella to increase the absorption area of the solar stream of photons and this accelerates it (where, obviously, the repulsive pressure of photons exceeds the increase in gravitational attraction because the umbrella is impenetrable for photons and permeable for gravity for which umbrella makes negligible impact).

Gravity shielding.

As Podkletnov (and the team) showed in experiments, it is possible to shield gravity, and it was previously concluded that this experiment created a gravity tunnel going approximately vertically up above the disk.

Previously, when analyzing this experiment in this article, the basic principles of gravity for space objects were used, where the main force is created by a directional field flow at a large distance.

As was shown in this section, gravity flows on the surface of the Earth are almost completely compensated in all directions, which makes some conclusions on the analysis of the disk experiment and those made in section 8 (calculations) incorrect.
Let's correct the forces and scheme of distribution of the field made earlier:

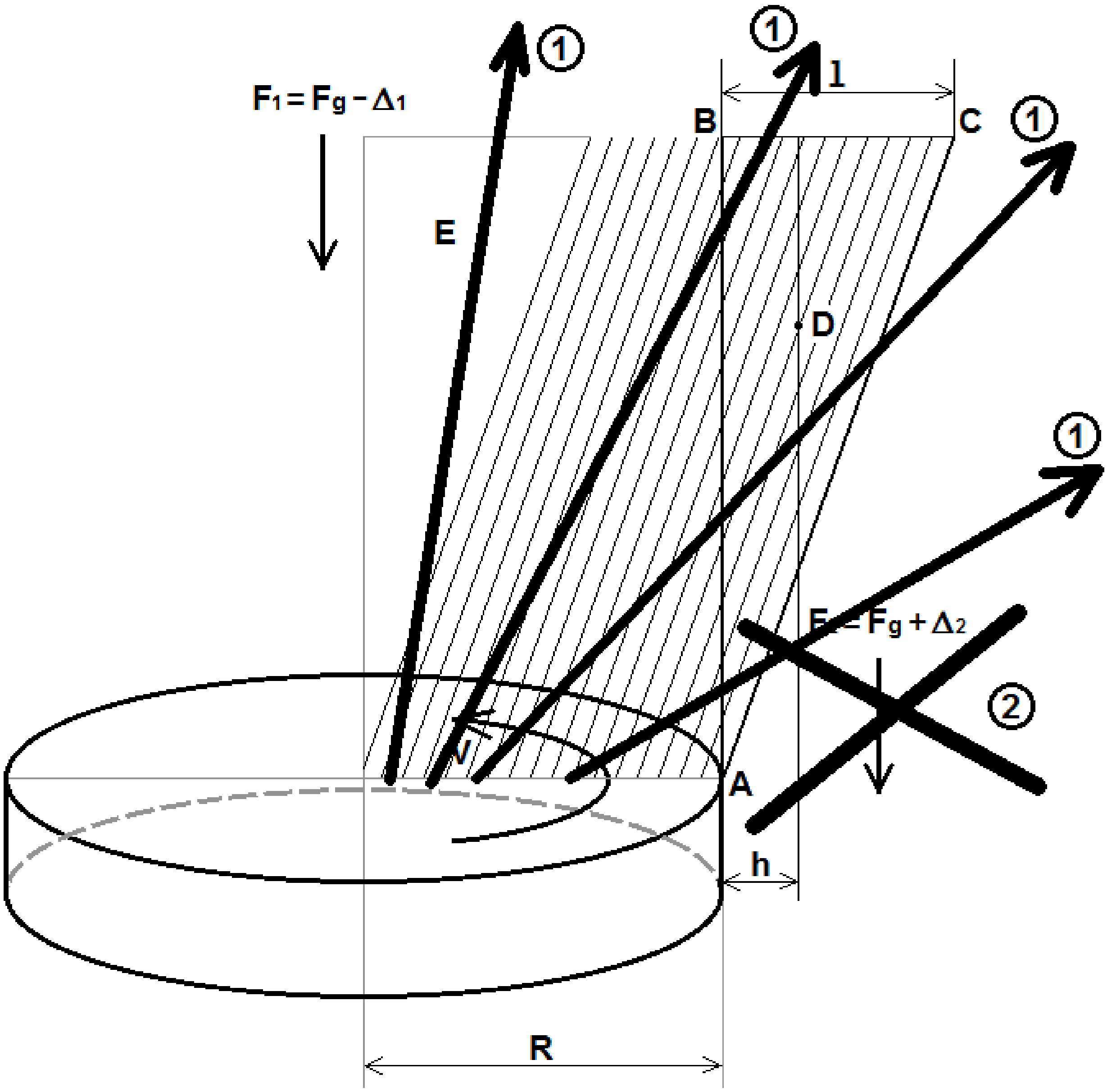

Figure 9-14.

1. It is necessary to correct the outgoing flow of the field g_2, which is almost evenly distributed over the sphere, and does not go vertically upwards, as indicated by the arrows with the number 1 in the figure. These directions indicate the outgoing field, and accordingly, the field shift when the disk rotates will occur down the sphere relative to these lines. According to its influence, the disk does not completely remove particles from the area of action to the disk by a reverse field, but changes the average angle of action to a more horizontal one, which changes (decreases) the average force directed vertically downwards.
2. Removed the force of gravity, which was supposed to act on the region B-C and increase the force of gravity there.
   The formula $F = F_g + \Delta_2$ is actually correct because
   (1) the force of attraction really decreases, both in the direction indicated there, and in others where there is a field shift,
   (2) the index used there differs from the index of mass loss over the disk, and accordingly these are different values and F_2 can be considered with the amount of the shifted field just for that point,
   but, nevertheless, it is crossed out because logically in this scheme it refers to the section of the shifted field which is indicated incorrectly and which is actually distributed over the sphere.

At the same time, this should not affect the previous calculations of t_{g1} because, for that extremely simplified approach, the field shift scheme by one segment or by a beam with distribution over the sphere are most likely equivalent, and this may not change the result of those calculations, what needs to be analyzed in more detail.

Another interesting conclusion from the theory of gravity on the surface is the ability to screen the field from the side of the object, thus creating a force directed to the side, and for the field g_2 this can also be done along lines parallel to the Earth's surface and not connected with it (with the radiating object).

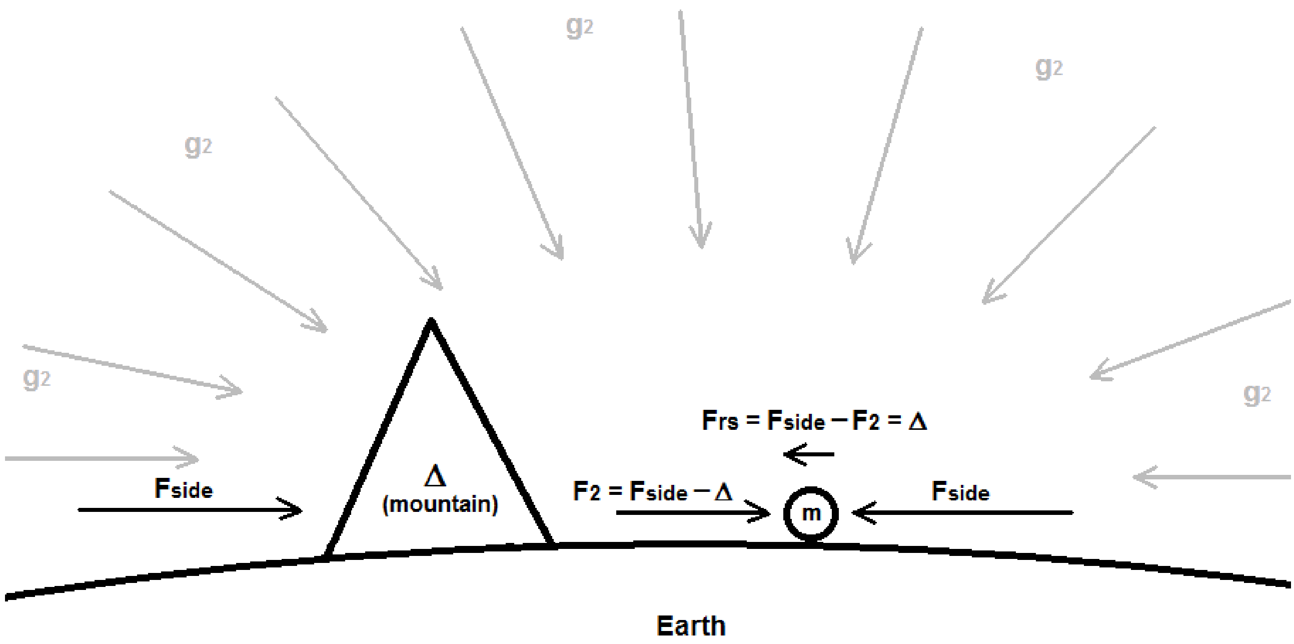

Figure 9-15.

Designations on the diagram:

F_{side}	field force acting from the side.
m	an object which is acted upon by forces, including shielded ones.
Δ	a mountain that shields part of the field from the side.
F_{rs}	resulting force.

$$F_{rs}=F_{side}-(F_{side}-\Delta)=\Delta$$

Conclusions on this section:

1. The force of attraction (for small objects with large gravitational permeability) on the surface (of large objects) is almost completely negligible compared to the forces of outgoing and returning flows of the gravitational field separately.
2. On the surface the pressure from above (almost uniformly distributed along directions) by the field g_2 is balanced by the distributed pressure of the field g_1 from below (which shows the difference in the type of particles creating pressure from above and below).
3. The force of attraction on the surface is created by the amount (uncompensated from the sides) of the field not exceeding the distance of the radius (which is negligible relative to the entire field mass and also proves point 1 above).
4. The object can change the force of attraction by changing the shape (= the average permeability for all directions of pressure of the uncompensated field).
5. The g_1 field can be shielded not only in the vertical direction, but in accordance with the distribution of the outgoing flow, which can create uncompensated pressure for the object from from the side (= the resulting force may not be directed to the center of the Earth, depending on the position of the object relative to the shielding object). For the g_2 field, it is possible to shield the force along the lines that do not pass through the Earth (not counting the shielding object itself as a part of the Earth).