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Anomalous Gravitational Properties of Powders of Projection.

In this paper, we explored a substance known in alchemical literature as Powder of Projection. Anomalous gravitational (AG) effects that this substance causes have been discovered :

- **Changing of gravitational mass.**
- **Effect of ballon during long jump.**

A theory of the AG effects is proposed, that explains the features of these anomalous effects.

Contents

Introduction. Anomalous Gravitational Effects.

By Anomalous Gravitational (AG) effects we mean any effects and phenomena that contradicton General Theory of Relativity. These are :

- Changing of gravitational mass. Violation of the principle of equivalence of inertial and gravitational mass.
- Shielding of gravitational field.

In this paper we describe experiments that these effects were discovered and propose phenomenological theory of the AG effects.

1. Powders of Projection.

1.1. Anomalous Gravitational Effects and Powders of Projection.

This work is devoted to study of substances that are called Powders of Projection (PP) in European medieval alchemical literature. The Powders of Projection are known since ancient times. There are two types of the Powders fo Projection :

- The Red PP.
- The White PP.

PP are substances unknown to academy science. PP possess a number of unusual properties. The highest stage of PP is called the Philosopher's Stone - substance that, according to alchemical literature, has the ability to turn ordinary metals into silver (white PP) and gold (red PP).

The anomalous gravitational properties of PP were noted in some alchemical treatises **[3]**.

In this work we explore of the anomalous gravitational properties of the red PP.

1.2. Getting of Powders of Projection.

Methods of getting PP, which are described in the alchemical literature, allow many interpretations.

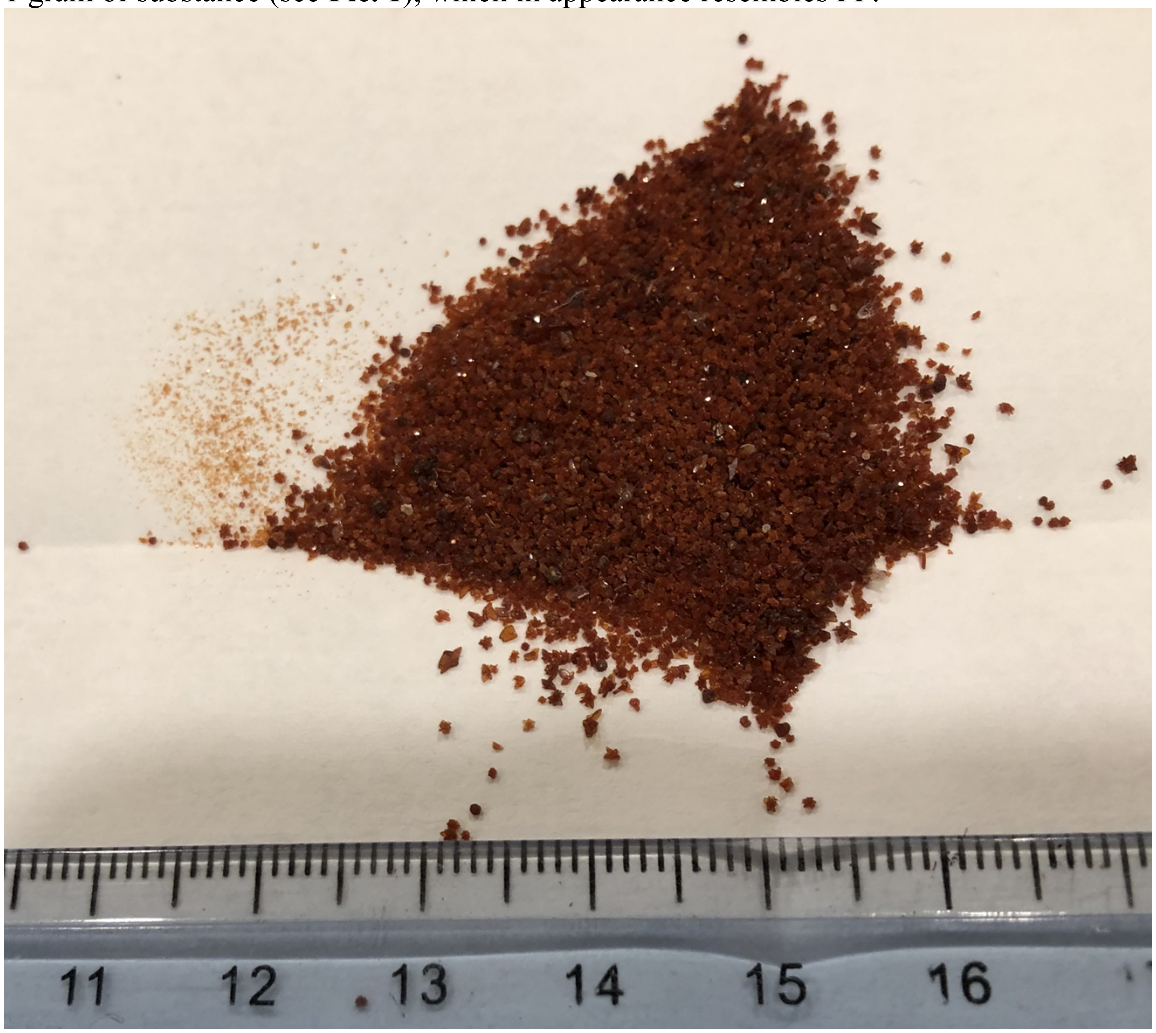
We interpreted alchemical texts as description of sensations of processes occurring in human body. We got substances similar in description to the PP (see **Pic. 1**). In our opinion, the secret to getting the PP is the secret of physical training of the human body so that PP is formed in it. According to alchemical literature, preparation to obtain the Philosopher's Stone takes more than 30 years. Our Powders of Projection began to be formed in our body after 35 years of yoga exercises. Powders of Projection are formed in human blood when the organism experiences severe stress, is put on the brink of life and death.

The alchemical literature describes three ways to obtain the PP and the Philosopher's Stone:

- “Wet way” - it takes 40 days.
- “Dry way” - it takes 8 days.

- "Instant way".

We interpreted the "wet way" and "dry way" as fasting with drinking water and without drinking water. After 5 days of dry (without drinking water) fasting, we got about 1 gram of substance (see **Pic. 1**), which in appearance resembles PP.

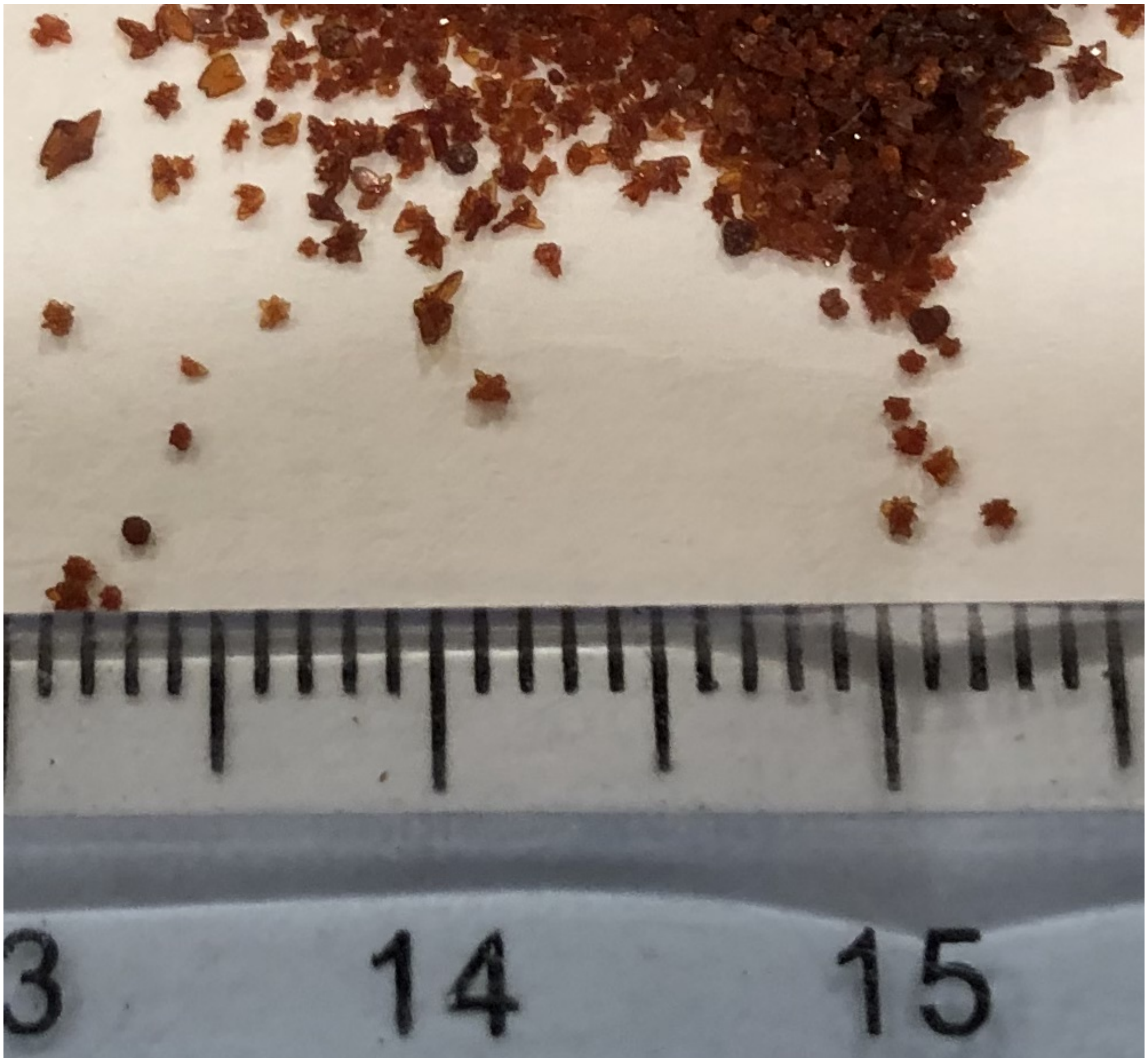


Pic. 1. Red Powder of Projection after 5 days of dry fasting.

1.3. Properties of the Red Powders of Projection.

1. Effectiveness of Powders of Projection depends on strength of stress.
2. Effectiveness and properties of Powders of Projection are different for different people.
3. PP are dark red crystals break easily (see **Pic. 2**).
4. Specific Gravity (SG) = 1.1 - 1.2 g/cm^3 and more. The higher the SG, the better effectiveness of PP.
5. Solubility in water is very poor.

6. When PP are heated in water at temperature above 65 degrees Celsius, smell of ammonia appears.



Pic. 2. Crystals of Red Powder of Projection.

2. Experiments.

2.1. Anomalous Gravitational effects during long jump (ballon effcet).

2.1.1. Long Jump and Ballon.

In 1968, at the Olympic Games in Mexico City, American athlete Bob Beamon set a world and Olympic record by jumping 8.90 meters. Immediately by 55 centimeters (22 inches) improving the previous world achievement. And by 69 centimeters (27.5 inches) improving his best result. As the Olympic record, the result of Bob Beamon is not surpassed todate.

Here is how the best Soviet jumper Igor Ter-Ovanesyan (he was the 4th on the 1968 Olympic Games) described this jump. He personally closely watched this famous jump :

“Observing outstanding dancers, I repeatedly admired their amazing ability to hang in the air for a moment during a jump. This hang, which is called a “ballon,” is difficult to train and for the most dancers is an innate ability. Beamon in the middle of his flight, even more in the second half, at the moment when other jumpers fell down like stone, this miracle happened - a “ballon”, and he hovered above the sand pit, as on an invisible parachute.”

(**Igor Ter-Ovanesyan “Eight ninety”**)

Today, science denies the possibility of a real hovering in the air. It considers ballon as illusion :

“A dancer will appear to defy the laws of physics when ballon is exhibited effectively. For example, during a grand jeté, the dancer may appear to hover in the air. Physically, the dancer's center of mass follows a ballistic trajectory, as does any projectile, but observers have limited ability to reckon center of mass when a projectile changes its configuration in flight. By raising the arms and legs while ascending and lowering them while descending, the dancer alters the apparent path of the center of mass and, in so doing, seems to observers to be momentarily floating in the air.”

(Wikipedia (eng), “Ballon (ballet)”)

2.1.2. Bob Beamon's long jump.

Let's estimate how long Bob Beamon could hang in the air? The best result of Bob Beamon before his jump in Mexico City in 1968 was 8.21 meters (1967). That is, the effect of the ballon gave him an increase of 69 centimeters. His horizontal speed during the jump was about 9.6 m per second, so the effect of the ballon lasted 0.69 / 9.6 = 72 millisecond

But why was the ballon not detected on the video film?

The speed of ordinary filming, during Beamon’s jump, was 24 frames per second. Frames change after 1/24 = 0.042 seconds. That is, the effect of the ballon for Bimon is a hang of about one and a half intervals. That is, the ballon will appear in only one frame. This is not enough. In addition, during the jump, Bimon actively moved his arms and legs and therefore the same additional problem appears as that of dancers: due to the displacement of body parts, it is impossible to even detect reliably something anomalous in the videofilming of Bob Beamon’s jump.

And only the experienced look of Igor Ter-Ovanesyan noticed something unusual in this jump.

2.1.3. Method for detecting effect of the ballon.

To detect the effect of the ballon, we used the following method :
We compared time of the standing long jump and time of the standing vertical jump.

According to the laws of ballistics, with the same repulsive force, the time spent in flight during standing vertical jump must be $\sqrt{2} \approx 1.41$ longer than the time in flight during standing long jump. In fact for human, this ratio is slightly larger due to the physiology of human jump.
For example, let see standing vertical jump and standing long jump of unofficial world champion Byron Jones **[14]**.

If you watch this video in separate frames, you can see that Byron Jones is in flight 891 ms during his vertical jump. And during the long jump 627 ms. So, for these two jumps the rule of the square root

$$\mathbf{T_{up}/T_{long} = 891/627 = 1.42 > \sqrt{2}}$$

is executed. And both jumps occur according to the rules of ballistics. But if the ballon effect takes place during a long jump, then the flight time during a long jump has to increase and the ratio $\mathbf{T_{up}/T_{long}}$ has to decrease.

2.1.4. Our long jumps with patch of Powders of Projection.

In the alchemical literature it is indicated that if a philosopher's stone is applied to the body, then this person will have a state of levitation **[3]**. We conducted experiments with the obtained powders of projection.
We used a patch with Powders of Projection to put ourselves into a ballon condition.

If we jumped without a patch with Powders of Projection then the square root rule was fulfilled. But when we began to use a patch with Powders of projection, the ratio was changed. During the long jump, we were in the air for 429 ms, and during the vertical jump we were 495 ms. and

$$\mathbf{T_{up}/T_{long} = 495/429 = 1.15.}$$

That is, we improved our result by 20%. (additional information see on our website **[13]**)

According to the laws of ballistics, during the long jump we were supposed to be in flight 495 / 1.41 = 351 ms. So, we improved our result on 20%. Bob Beamon improved his result on 8.4% only.

2.2. Anomalous Gravitational effect during free fall (modeling of ballon effect).

We did an experiment that simulates the effect of a ballon.
There are two small plastic bags :
Bag 1 was with common salt.
Bag 2 was with the red PP.
The both bags were the same. The weight of both bags was the same.

Experiment 1. Two bags at the same time free to fall vertically down.

Result.
Both bags fell to the ground at the same time. We did not see any anomalies **(see. Pic.3)**.

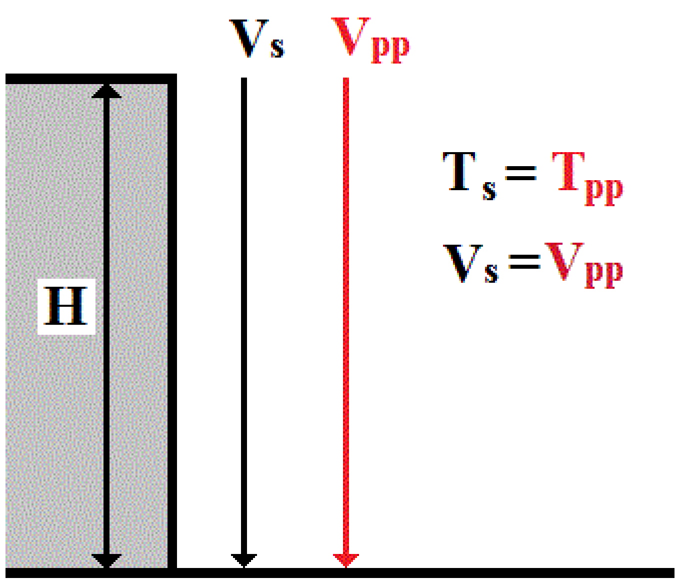


Рис.3. Falling of two bags :
Red line – the bag with red Power of Projection.
Black line – control bag with common salt.
H = 50 cm.
Beginning velocities are the same $V_s = V_{pp}$
Falling times are the same $T_s = T_{pp}$

Experiment 2. Two bags were simultaneously dropped from the table at the same horizontal speed.

Result.

A bag with red powder has flown about 20% more distance than a control bag of salt (см. **Рис 4**).

We did more 1,000 the experiments.

L_{pp} (average distance) = 103 cm.

σ_{pp} (Standard Deviation) =12 cm.

L_s (average distance) = 80.5 cm.

σ_s (Standard Deviation) = 15 cm.

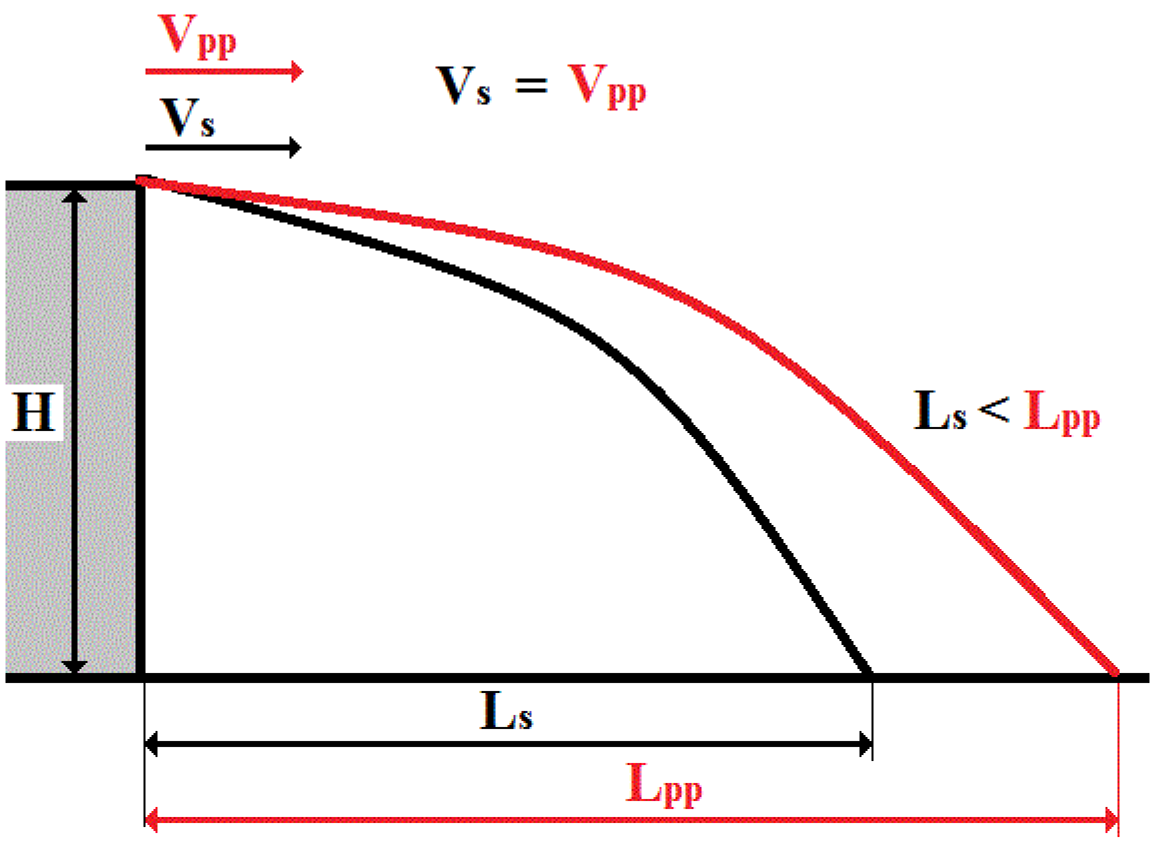


Рис.4. The trajectories of the fall of two bags.
Red line – the bag with Red Power of Projection.
Black line – the control bag with common salt.
H = 50 cm.
L_s = 103 cm.
L_{pp} = 80.5 cm.

Comparison of the results of experiment 1 and 2.

The results of experiments 1 and 2 at first glance contradicted each other.

- Experiment 1 shows the absence of AG effects - both packets fall simultaneously.
- Experiment 2 shows the presence of AG effects - a bag with red Power of Projection has flied greater distance, and therefore, we think, it fell more slowly.

These experimental results are explained in section **(3.6)**.

3. Theory of Anomalous Gravitational Effects.

Anomalous Gravitational effects cannot be explained by the General Theory of Relativity and other generally accepted physical theories based on the physical concept of the Universe. To explain these effects, we need to change our concept of the Universe. The new concept must satisfy the following conditions :

1. To include generally accepted physical theories as a special case.
2. To explain all the features of AG effects.
3. To be the most simple.

In this section, we propose a simple phenomenological model of AG effects, which correctly describes our experimental results and is as close as possible to the theoretical concepts accepted today in physics.

3.1. Information Conception of the Universe.

The information conception of the Universe was proposed in 1948 by Norbert Wiener. However, within the framework of this conception, fundamentally new results were not obtained. In our opinion, the reason for this is that scientists used the theory of information proposed by Claude Shannon.

We thing that the information conception of the world should include ideas about the transfer of encrypted information over open communication lines. Such algorithms were proposed in the 70-s and are now widely used on the Internet.

The information conception of the Universe, which takes into account the possibility of transmitting encrypted information, we will call the crypto-information conception of the Universe.

3.2. Crypto-Information Conception of the Universe.

The main points of the crypto-informational conceptionion of the Universe:

1. Each object moves in accordance with the information about the world that it receives from other objects.
2. Information can be of two types: open information received by all objects in the Universe, and encrypted information received only by the object for which it is intended.

3. A visible world is a form of presentation of open information that all objects received from all others objects.
4. Since all objects in the Universe receive open information, the observed world seems to be the same for all observers.
5. Nature uses absolutely unbreakable ciphers to transmit encrypted information. In our article **[7]** we showed how to make absolutely unbreakable cipher to transmit information through open channel using three-pass Shamir's protocol [**12]**.
6. Encrypted information cannot be represented in the form of space and time.

3.3. Lagrangian of free particle in the case of crypto-information interaction.

3.3.1. General form for Lagrangian in case of crypto-information interaction.

The motion of a particle is described by the Lagrange's equations :

$$\frac{d}{dt}\frac{\partial L}{\partial \dot{q}_k} - \frac{\partial L}{\partial q_k} = 0, \qquad (3.1)$$

L – Lagrangian of a system, q_k – its generalised coordinates. We want to build a theory in which equations **(3.1)** remain valid in the case of crypto-informational interaction. And only the Lagrangian of the system should undergo a change.

The Lagrangian **L** of particle, if it moves in accordingly with open information, is the famous physical Lagrangian L_{phys}. But how will the Lagrangian be changed in the case of crypto-informational interaction (when the particle receives encrypted information)?

Information is additive quantity. In addition, in absence of crypto-informational interactions, the full Lagrangian L_{full} must go into the famous physical Lagrangian L_{phys}. So, we proposed that the full Lagrangian L_{full} is sum of the physical Lagrangian L_{phys} and the Lagrangian of crypto-information interaction $L_{c\text{-}inf}$:

$$L_{full} = L_{phys} + L_{c\text{-}inf} \quad . \qquad (3.2)$$

In this case, $L_{c\text{-}inf}$ must go to zero in the absence of crypto-information interaction. So, our task to find the Lagrangian $L_{c\text{-}inf}$.

3.3.2. Non-relativistic case.

For non-relativistic case the physical Lagrangian **[4, §4]** :

$$L_{phys} = \frac{m_{in}}{2}\cdot v^2 = \frac{m_{in}}{2}\cdot |v|\cdot|v| \quad , \qquad (3.3)$$

where :
m_{in} – inertial mass;
v – velocity of particle relative to the inertial reference frame;

$|\mathbf{v}|$ – magnitude of the velocity.

For crypto-information interaction we can expected that :

1. $\mathbf{L_{c\text{-}inf}}$ must be an additive to $\mathbf{L_{phys}}$ (see. **(3.2)**).
2. $\mathbf{L_{c\text{-}inf}}$ should look like $\mathbf{L_{phys}}$ **(3.3)**.

According to the provisions of the crypto-information concept (see **3.2**), space and time are only a form of presentation of open information. There is an unambiguous correspondence between the open information received by the body and its coordinates. Therefore, we can differentiate open information by coordinates and time.

Encrypted information cannot be represented in form of space and time. For this reason, there is not one-to-one correspondence between the received encrypted information and coordinates of space and time. And amount encrypted information cannot be differentiated by coordinates and time. Encrypted information is transferred by open information. That is, a message that carries encrypted information always carries open information too. Therefore, the Lagrangian of classified information $\mathbf{L_{c\text{-}inf}}$ will contain both public information and encrypted information. Therefore, the $\mathbf{L_{c\text{-}inf}}$ should contain terms that can be differentiated by time and space, and that cannot be differentiated by time and space.

In the simplest case, the $\mathbf{L_{c\text{-}inf}}$ for a free particle has the form:

$$\mathbf{L_{c\text{-}inf}} = |\mathbf{v}|^{`} \cdot (\mathbf{a_{c\text{-}inf}} \cdot |\mathbf{v}|) . \qquad \mathbf{(3.4)}$$

$\mathbf{L_{c\text{-}inf}}$ is the same, as lagrangian for open information **(3.3)**, but in it only the first factor describing the open information $|\mathbf{v}|^{`}$- undergoes differentiation in time and space (we marked this fact with the symbol ` with this factor). The second factor $(\mathbf{a_{c\text{-}inf}} \cdot|\mathbf{v}|)$ describe encrypted information cannot be differentiated in time and space.

This strange differentiation rule is explained by the fact that information in the case of crypto-informational interaction is transmitted using the three-pass Shamir's protocol. A mathematically correct explanation of this rule can be given only if we know the algorithm that nature uses. For the proposed phenomenological model, we formulated this rule based on general considerations.

Note, the function **(3.4)** is independent of the direction of **v**, and is a function only of its magnitude as **(3.3)**.

Since the information cannot be negative, we assume that $\mathbf{a_{c\text{-}inf}} > \mathbf{0}$.

So, the full Lagrangian $\mathbf{L_{full}}$ of a free particle is addition of Lagrangian of open information **(3.3)** and Lagrangian of encrypted information **(3.4)** :

$$\mathbf{L_{full}} = \mathbf{L_{phys}} + \mathbf{L_{c\text{-}inf}} = \frac{\mathbf{m_{in}}}{\mathbf{2}} \cdot |\mathbf{v}|' \cdot |\mathbf{v}|' + \mathbf{a_{c\text{-}inf}} \cdot |\mathbf{v}| \cdot |\mathbf{v}|' \qquad \mathbf{(3.5)}$$

We think that the, $\mathbf{a_{c\text{-}inf}}$ coefficient should be proportional to the inertial mass $\mathbf{m_{in}}$:

$$\mathbf{a_{c\text{-}inf}} = \mathbf{a^0_{c\text{-}inf}} \cdot \mathbf{m_{in}} \quad , \qquad \mathbf{(3.6)}$$

where $a^0_{c\text{-}inf}$ - is dimensionless constant of crypto-information interaction, the same for all particles of the system.

If there is not crypto-information interaction $a^0_{c\text{-}inf} = 0$ and $L_{full} = L_{phys}$.

3.4. The equations of motion of a free particle for the crypto-informational interactions for the nonrelativistic case.

Now we get the equations of motion of the particle, for the crypto-informational interaction in the gravitational field in the nonrelativistic case.

In nonrelativistic mechanics, the gravitational field is described by the scalar potential **φ (x, y, z)**. The Lagrange's equations **(3.1)** in Cartesian coordinates in this case take the form :

$$m_{in} \cdot \frac{d v_i}{dt} = - m_{gr} \cdot \frac{\partial \varphi}{\partial x_i} \quad , \qquad \textbf{(3.7)}$$

where $x_i = \{x, y, z\}$, and m_{in}, m_{gr} - inertial and gravitation masses of particle.

We substitute the full value of the Lagrangian **(3.5)** into the equations of motion **(3.1)**. In Cartesian coordinates, the partial derivative of **|v|`** with respect to v_i :

$$\frac{\partial |v|'}{\partial v_i} = \frac{v_i}{|v|'} . \qquad \textbf{(3.8)}$$

And the total derivative **(3.8)** with respect to **t** will be:

$$\frac{d}{dt}\left(\frac{v_i}{|v|}\right) = \frac{1}{|v|} \cdot \left[\frac{d v_i}{dt} - \frac{v_i}{|v|^2} \sum_j v_j \cdot \frac{d v_j}{dt}\right] \quad . \qquad \textbf{(3.9)}$$

Then, in the Cartesian coordinates, the equations of motion for the full Lagrangian **(3.5)**, taking into account **(3.8)** and **(3.9)**, will take the form:

$$m_{in} \frac{d v_i}{dt} + m_{in} a^0_{c\text{-}inf} \cdot \left[\frac{d v_i}{dt} - \frac{v_i}{|v|^2} \sum_j v_j \cdot \frac{d v_j}{dt}\right] = - m_{gr} \cdot \frac{\partial \varphi}{\partial x_i} \quad , \qquad \textbf{(3.10.a)}$$

or

$$m_{in} \frac{d v_i}{dt} = - m_{gr} \left(1 - \frac{m_{in}}{m_{gr}} a^0_{c\text{-}inf} \cdot \left[\frac{d v_i}{dt} - \frac{v_i}{|v|^2} \sum_j v_j \cdot \frac{d v_j}{dt}\right]\right) \cdot \frac{\partial \varphi}{\partial x_i} \quad , \qquad \textbf{(3.10.b)}$$

These are equations that describe the motion of a particle in the gravitational field **φ(x, y, z)** if crypto-informational interaction is taken into account.

3.5. Conservation Laws for crypto-information interaction.

3.5.1. Conservation of energy.

Since the equations of motion **(3.1)** are preserved during crypto-informational interaction, the conclusion for the energy conservation law **[4, §6]** remains valid. The additional term $\mathbf{L}_{\mathbf{c\text{-}inf}}$ in the Lagrangian of crypto-informational interaction does not make any additional contribution$\Delta \mathbf{E}_{\mathbf{c\text{-}inf}}$ to the energy of the system **E** :

$$\Delta E_{c\text{-}inf} = \sum_i v_i \cdot \frac{\partial L_{c\text{-}inf}}{\partial v_i} - L_{c\text{-}inf} = a_{c\text{-}inf} \cdot |v| \cdot \left(\sum_i v_i \cdot \frac{v_i}{|v|} - |v| \right) = 0 \,. \qquad (3.11)$$

And therefore, the law of conservation of energy, in the form in which it is formulated in classical mechanics, is fulfilled for crypto-informational interaction.

3.5.2. The laws of conservation of momentum and angular momentum.

Equations **(3.10)** is a system of nonlinear differential equations in which velocities in spatial coordinates are interconnected. Because of this, the laws of conservation of momentum and angular momentum, as they are formulated in classical mechanics, are not satisfied with crypto-informational interaction.

3.6. Motion of a free particle in a uniform gravitational field.

Let a particle with an inertial mass $\mathbf{m}_{\mathbf{in}}$ at time $\mathbf{t = 0}$ begin free movement from the origin $(\mathbf{x = 0, y = 0})$ with the initial velocity $\mathbf{v_x(0) = v_x^0}$, $\mathbf{v_y(0) = v_y^0}$. The gravitational field **g** is uniform and directed along the **Y** axis: $\mathbf{g = g(y) = -\partial\varphi / \partial y}$.

In the case of the usual physical interaction (obtaining open information), we integrate equations **(3.7)** and get the equations for the trajectory of the particle :

$$x(t) = v_x^0 \cdot t \,, \qquad (3.12.a)$$

$$y(t) = v_y^0 \cdot t - \frac{m_{gr}}{m_{in}} \cdot \frac{g \cdot t^2}{2} \,. \qquad (3.12.b)$$

The trajectory of the particle is a parabola

$$y(x) = a \cdot x - \frac{1}{2 \cdot p_{phys}} \cdot x^2 = \frac{v_y^0}{v_x^0} \cdot x - \frac{m_{gr}}{m_{in}} \cdot \frac{g}{2 \cdot {v_x^0}^2} \cdot x^2 \,. \qquad (3.13)$$

$\mathbf{p}_{\mathbf{phys}}$ is the focal parameter. For the case of ordinary physical interaction, it is:

$$p_{phys} = \frac{m_{in}}{m_{gr}} \cdot \frac{(v_x^0)^2}{g} \quad . \tag{3.14}$$

The flight time $\mathbf{T_0}$, the flight length $\mathbf{l_0}$ and the flight height $\mathbf{H_0}$ for such a movement are:

$$T_0 = 2 \cdot \frac{m_{in}}{m_{gr}} \cdot \frac{v_y^0}{g} \quad , \tag{3.15 a}$$

$$l_0 = 2 \cdot \frac{m_{in}}{m_{gr}} \cdot \frac{v_x^0 \cdot v_y^0}{g} \quad , \tag{3.15.b}$$

$$H_0 = \frac{m_{in}}{m_{gr}} \cdot \frac{(v_y^0)^2}{2 \cdot g} \quad . \tag{3.15.c}$$

If crypto-information interactions are taken into account, then it is necessary to integrate equations **(3.10)**. For our case, these equations take the form:

$$\frac{dv_x}{dt} + a^0_{c\text{-}inf} \cdot \left[\frac{dv_x}{dt} - \frac{v_x}{|v|^2} \cdot \left(v_x \cdot \frac{dv_x}{dt} + v_y \cdot \frac{dv_y}{dt}\right)\right] = 0 \quad , \tag{3.16.a}$$

$$\frac{dv_y}{dt} + a^0_{c\text{-}inf} \cdot \left[\frac{dv_y}{dt} - \frac{v_y}{|v|^2} \cdot \left(v_x \cdot \frac{dv_x}{dt} + v_y \cdot \frac{dv_y}{dt}\right)\right] = -\frac{m_{gr}}{m_{in}} \cdot g \quad . \tag{3.16.b}$$

Equations **(3.16)** can be written as :

$$\frac{dv_x}{dt} = -\frac{a^0_{c\text{-}inf}}{1 + a^0_{c\text{-}inf}} \cdot \frac{m_{gr}}{m_{in}} \cdot g \cdot \frac{v_x \cdot v_y}{v_x^2 + v_y^2} \quad , \tag{3.17.a}$$

$$\frac{dv_y}{dt} = -\frac{1}{1 + a^0_{c\text{-}inf}} \cdot \frac{m_{gr}}{m_{in}} \cdot g \cdot \left(1 + a^0_{c\text{-}inf} \cdot \frac{v_y \cdot v_y}{v_x^2 + v_y^2}\right) \quad . \tag{3.17.b}$$

If $\mathbf{a^0_{c\text{-}inf} \ll 1}$, then

$$\frac{dv_x}{dt} \approx -a^0_{c\text{-}inf} \cdot \frac{m_{gr}}{m_{in}} \cdot g \cdot \frac{v_x \cdot v_y}{v_x^2 + v_y^2} \quad , \tag{3.18.a}$$

$$\frac{dv_y}{dt} \approx -\frac{m_{gr}}{m_{in}} \cdot g \cdot \left(1 - a^0_{c\text{-}inf} \cdot \frac{v_x^2}{v_x^2 + v_y^2}\right) \quad . \tag{3.18.b}$$

From equations **(3.17)** we see that the trajectory is asymmetric with respect to the highest point of rise. At the second stage (when the particle goes down), the trajectory is more gentle than when rising.

To solve these equations, if $\mathbf{v_{x0} \neq 0}$, we will take into account the fact that $\mathbf{a^0_{c\text{-}inf} \ll 1}$ (experiments show that $\mathbf{a^0_{c\text{-}inf} \sim 0.1}$). Then we will seek a solution to the system of equations **(3.17)** in the form of an expansion in powers of $\mathbf{a^0_{c\text{-}inf}}$:

$$v_x(t) = v_{x0} + (a^0_{c\text{-}inf}) \cdot v_{x1} + (a^0_{c\text{-}inf})^2 \cdot v_{x2} + \ldots \quad , \qquad (3.19.a)$$

$$v_y(t) = v_{y0} + (a^0_{c\text{-}inf}) \cdot v_{y1} + (a^0_{c\text{-}inf})^2 \cdot v_{y2} + \ldots \quad . \qquad (3.19.b)$$

For v_{x0} and v_{y0} we have equations for the case of open information **(3.12)**, and accordingly the same curve (symmetric parabola **(3.13)** with parameters **(3.14, 3.15)**).

Equations for v_{x1} and v_{y1} are

$$\frac{dv_{x1}}{dt} = -\frac{m_{gr}}{m_{in}} \cdot g \cdot \frac{v_{x0} \cdot v_{y0}}{v_{x0}^2 + v_{y0}^2} \quad , \qquad (3.20.a)$$

$$\frac{dv_{y1}}{dt} = \frac{m_{gr}}{m_{in}} \cdot g \cdot \frac{v_{x0}^2}{v_{x0}^2 + v_{y0}^2} \quad , \qquad (3.20.b)$$

Where

$$v_{x0}(t) = v_x^0 \quad , \qquad (3.21.a)$$

$$v_{y0}(t) = v_y^0 - \frac{m_{gr}}{m_{in}} \cdot g \cdot t \; . \qquad (3.21.b)$$

From **(3.18.b)** we can see that crypto-informational interaction always reduces external gravitational field.

Integrating **(3.20)**, we obtain the first two terms **(3.19)** :

$$v_x(t) = v_x^0 + a^0_{c\text{-}inf} \cdot \frac{v_x^0}{2} \cdot \ln\left(\frac{v_x^{0\,2} + v_{y0}^{\,2}}{v_x^{0\,2} + v_y^{0\,2}}\right) + \ldots \quad , \qquad (3.22.a)$$

$$v_y(t) = v_{y0}(t) - a^0_{c\text{-}inf} \cdot v_x^0 \cdot \left[\operatorname{arctg}\left(\frac{v_{y0}}{v_x^0}\right) - \operatorname{arctg}\left(\frac{v_y^0}{v_x^0}\right)\right] + \ldots \; . \qquad (3.22.b)$$

We choose constants in such a way that at $t = 0$, $v_x(0) = v^0_x$ и $v_y(0) = v^0_y$.

Near maximum hight point $v_{x0} >> v_{y0}$. In this case, near this point

$$v_x(t) \approx \left[1 - \frac{a^0_{c\text{-}inf}}{2} \cdot \ln\left(1 + \frac{v_y^{0\,2}}{v_x^0}2\right)\right] \cdot v_x^0 + \frac{a^0_{c\text{-}inf}}{2 v_x^0} \cdot v_{y0}^2 \quad , \qquad (3.23.a)$$

$$v_y(t) \approx (1 - a^0_{c\text{-}inf}) \cdot v_y^0 + a^0_{c\text{-}inf} \cdot v_x^0 \cdot \operatorname{arctg}\left(\frac{v_y^0}{v_x^0}\right) - \frac{m_{gr}}{m_{in}} \cdot g \cdot (1 - a^0_{c\text{-}inf}) \cdot t \quad . \qquad (3.23.b)$$

From **(3.23)** it can be seen that the trajectory of motion is an asymmetric trajectory close to a parabola with a focal parameter:

$$p_{c\text{-}inf} \approx \frac{m_{in}}{m_{gr}} \cdot \frac{v_{x0}^2}{g} \cdot (1 + a^0_{c\text{-}inf}) \quad . \qquad (3.24)$$

Flight time **T** and flight range **l** for the trajectory **(3.22)** are:

$$T \approx 2 \cdot \frac{m_{in}}{m_{gr}} \cdot \frac{v_y^0}{g} \cdot [1 + a^0_{c\text{-}inf} \cdot \frac{v_x^0}{v_y^0} \cdot \mathrm{arctg}\,(\frac{v_y^0}{v_x^0})] = T_0 \cdot [1 + a^0_{c\text{-}inf} \cdot \frac{v_x^0}{v_y^0} \cdot \mathrm{arctg}\,(\frac{v_y^0}{v_x^0})] \quad \textbf{(3.25a)}$$

$$l = \int_0^T v_x(t)\,dt \quad \textbf{(3.25b)}$$

Where T_0 is **(3.15.a)**, and $v_x(t)$ is **(3.22.a)**. We do not need to integrate **(3.25.b)** and obtain the exact value for the flight range, since we do not know the constant $a^0_{c\text{-}inf}$. But

$$l = \int_0^T v_x(t)\,dt > v_{x\,min}\,T \approx l_0 + a^0_{c\text{-}inf} \cdot l_0 \cdot [\frac{v_{x0}}{v_{y0}} \cdot \mathrm{arctg}\,(\frac{v_{y0}}{v_{x0}}) - \frac{1}{2} \cdot \ln(\frac{v_x^{0\,2} + v_y^{0\,2}}{v_x^{0\,2}})] \quad . \quad \textbf{(3.26)}$$

l_0 is **(3.15.b)**.

If $v^0_x = v^0_y$, then

$$l \approx l_0 + a^0_{c\text{-}inf} \cdot l_0 \cdot [\frac{\pi}{4} - \frac{1}{2} \cdot \ln 2] \approx l_0 \cdot (1 + 0.44 \cdot a^0_{c\text{-}inf}) \quad . \quad \textbf{(3.27)}$$

3.7. Discussion of experiments.

The above analysis allows us to explain the features of experiments in crypto-informational interaction:
1. Increase in flight range.
2. The increase in flight time, if there is a horizontal component.
3. Why, with vertical flight, the flight time remains the same, and AG effects are not observed.

From equations **(3.16)** we can explain effect 3. If $v_x = 0$, then $|v_y| = |v|$, equations **(3.16)** in this case are separated and turn into equations for the case of open information:

$$\frac{dv_x}{dt} = 0 \quad , \quad \textbf{(3.28.a)}$$

$$\frac{dv_y}{dt} = -\frac{m_{gr}}{m_{in}} \cdot g \quad . \quad \textbf{(3.28.b)}$$

Accordingly, the flight time during crypto-informational interaction will be the same as during normal flight, and the anomalous gravitational effect will not be noticeable.

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