

Nature and Origin of Gravitational Waves According Open Vortex Theory

Valentina Markova (PhD)*

Bulgarian Academy of Sciences

*Corresponding author:

Valentina Markova (PhD),
Bulgarian Academy of Sciences.

ABSTRACT

Longitudinal open vortices with positive or negative acceleration are described in the Open Vortex Theory by the same author. This new Theory contains 2 new Axioms and 8 Laws. It describes longitudinal open vortices with a direction from rarer to denser medium which are decelerating. It describes also longitudinal open vortices with a direction from denser to rarer medium which are accelerating. This report uses 1 axiom and 4 Laws.

For decelerating longitudinal vortices, the reason is the negative acceleration of the velocity along the length of the vortex. The decelerating longitudinal vortices emit Primary decelerating transverse vortices called decelerated Quanta from themselves outwards. The decelerated Quanta have negative acceleration and amplitudes in every cross section the velocity vector in z-axis. Because they emit many decelerating Quanta two decelerating longitudinal vortices repel each other. When several decelerating longitudinal vortices with different negative accelerations in longitudinal (velocity) and transverse (amplitude) parts are located close to each other, they are packed. They form a decelerating Funnel. The relative fastest vortex inserts into the center, the slower one winds around the outside and the slowest one wrapped around the outside. This is Gravitational Funnel that repels and opens the Space in every cross section from the center to the periphery. It forms non-linearly arranging accretion disk around itself in planes perpendicular to the its z-axis. The result is distortion the Space around the decelerating Funnel. The end effect is the opening of Space and the generation of matter.

For accelerating longitudinal vortices, the reason is the positive acceleration of the velocity along the length of the vortex. The accelerating longitudinal vortices suck in Primary accelerating transverse vortices called accelerated Quanta, from environment to themselves the accelerating Quanta have positive acceleration and amplitudes perpendicular to the velocity vector of the longitudinal vortex. Because sucking, two accelerating longitudinal vortices attract each other. When several accelerating longitudinal vortices with different positive accelerations in longitudinal (velocity) and transverse (amplitudes) parts are located close to each other, they are packed. They form an accelerating Funnel. It is made because the relatively fastest vortex inserts into the center, the slower one winds around the outside and the slowest one wrapped around the outside. This is Gravitational Funnel attracts and collapses the Space in the direction from the periphery to the center. It forms nonlinear accretion disk around itself in each of cross sections to the z- axis. The result is distortion the Space around it. The end effect is a contraction of the Space and the stretching of Time.

The reason of Gravity waves around Gravitational Funnels is acceleration of longitudinal vortex along z-axis and acceleration of Primary transverse vortices (Quanta) in plane x,y. The result is distortion of Space. The accelerating Funnel sucks Gravity waves towards itself while the decelerating Funnel emits Gravity waves outwards.

Keywords: Gravitational Waves, Open Vortex Theory, Longitudinal Vortices, Gravitational Funnels, Accelerating and Decelerating Vortices, Accretion Disks, Space-Time; Gravity.

Law1, Law2

a) Law1 for Volume 3D

The open decelerating transverse vortex (E_{2D}^-) generates inward an open accelerating longitudinal vortex (or Funnel) (H_{3D}^+) upward. This action transforms transverse decelerating vortex (E_{2D}^-)

Citation: Valentina Markova (2026) Nature and Origin of Gravitational Waves According Open Vortex Theory. J Modr Sci Scient Res 2: 1-7.

to longitudinal accelerating vortex($H_{3D}+$) through a particular transverse-longitudinal transformation with operator ($\Delta 1-$):

$\Delta 1-$

Vor ($E_{2D}-$) => Vor ($H_{3D}+$).

In this way, the electron is generated [2-4].

b) Law2 for Volume 3D

The open decelerating longitudinal vortex (or Funnel) ($H_{2D}-$) downward generates an open accelerating transverse vortex ($E_{3D}+$) outward. This action transforms longitudinal decelerating vortex ($H_{3D}-$) to transverse accelerating vortex ($E_{2D}+$) (as Reverse wave) through a particular longitudinal-transverse transformation with operator ($\Delta 1+$):

$\Delta 1+$

Vor ($H_{3D}-$) => Vor ($E_{2D}+$).

In this way, the proton is generated [2-4].

Law5 for Decelerating Cortex, the Decelerating Funnel and Decelerating Accretion Disk

a) Law5 for Volume 3D

The 3D decelerating vortex is described by a multitude of 4 nonparametric equations in which: longitudinal velocity (V) decreases in (n) portions ($1/\varphi^n$) times; the amplitude (W), the angular velocity (ω) and the number (N) of transverse vortices in an (n) wheel increase in (n) portions (φ^n) times:

$$V - V_0/V = -1,$$

$$W - W_0/W = 1,$$

$$\omega - \omega_0/\omega = 1,$$

$$N - N_0/N = 1.$$

where linear velocity V_0 is the starting value of v_n , amplitude of transverse vortex W_0 is the starting value of w_n , angular velocity ω_0 is starting value of ω_n , number of transverse vortices in every (n) wheel N_0 is starting value of n_n , [n_n] is the closest integer: v_n , w_n are periodic roots with period n ; v_n , w_n are mutual orthogonal that fulfill the orthogonal requirement: $v_n \cdot w_n = V_0 \cdot W_0$; v_n , ω_n are mutual orthogonal that fulfill the orthogonal requirement: $v_n \cdot \omega_n = V_0 \cdot \omega_0$; $n = 0 \div \infty$; the roots v_n , w_n , ω_n and n_n are expressed as: $v_n = (1/\varphi^n) \cdot V_0$, $w_n = \varphi^n \cdot W_0$, $\omega_n = \varphi^n \cdot \omega_0$, [n_n] = $\varphi^n \cdot N_0$; (φ) is Golden proportion that fulfills the requirement: $\varphi - (1/\varphi) = 1$, (Figure1a) [4,5].

It is well known that an equation is nonparametric when it do not depend on external parameters and it depend only on the internal ratio, called Golden proportion (φ) [7].

Result: Decelerating vortex describes by 4 nonparametric equations depend only of φ .

For decelerating vortex the Golden proportion φ is the ratio between amplitude of the transverse vortex (W) (as result) to the longitudinal vector (V) (as reason) [7].

Definition: For decelerating vortex the Golden proportion (φ) is proportional to the ratio (w_n/v_n) or: (w_n/v_n) = (φ^n).

Result: The decelerating vortex transforms maximal vector velocity (v_1) from starting point (n_1) to (n_{th}) final wheel with

maximal number of transverse vortices (w_n) with maximal amplitude of transverse vortices or maxima radius of transverse wheel, which is perpendicular to vector velocity V . Thus the current angular velocity (ω_i) and current amplitude of rotating wheel (w_i) become maximal in final (n_{th}) step (Figure1a).

b) Results

Result: An decelerating vortex emits the Primary decelerating vortices, called decelerating quanta, from itself to the outside to the environment.

Result: Two decelerating longitudinal vortices in close proximity repel each other.

A few decelerating vortices form decelerating Funnel which also repel each other.

Result: A few decelerating vortices form decelerating Funnel.

The decelerating Funnel opens up Space around itself, generates and arranges matter in this Space.

Result: In final step the decelerating Funnel generates a Space around itself.

Packing of Decelerating Funnel

a) The structure of decelerating Funnel

-The relative **fastest** longitudinal vortex that has the **least** negative acceleration (or **minimal** repelling) is in **the center** of Funnel. It has maximal longmininal velocity (V_0) and minimal angular velocity (ω_0). Thus, it appears first in time (t_1).

- The **slower** longitudinal vortex is twisted **outside the center** of Funnel. This means that the slower longitudinal vortex has **the greater** negative acceleration or bigger repelling. It has less longmininal velocity (V_0/φ^1) and bigger angular velocity ($\omega_0 \cdot \varphi^1$). Thus, it appears second in time (t_2).
- The next to pheriphery the longitudinal velocities are (V_0/φ^2), (V_0/φ^3), (V_0/φ^4) and so on. The next to periphery the angular velocities are: ($\omega_0 \cdot \varphi^2$), ($\omega_0 \cdot \varphi^3$), ($\omega_0 \cdot \varphi^4$) and so on. The next to periphery vortices appeare in times: t_3, t_4, t_5 and so on (Figure1a).
- The relative **slowest** longitudinal vortex that has the **most** negative acceleration (or **maximal** repelling) rotates in periphery of Funnel. It has minimal longitudinal velocity (V_0/φ^n), and maximal angular velocity ($\omega_0 \cdot \varphi^n$). Thus, it appears last in time in (t_n).

b) For Example, Let's have 3 Longitudinal Vortices

- The central longitudinal vortex will appear first in time (t_1) because it is the fastest. It has the maximal longitudinal velocity (V_0) and smallest angular velocity (ω_0). For example, with this minimal velocity (ω_0) the central vortex has rotated 800 (first quadrant).
- The outer longitudinal vortex will appear second at time (t_2). It has a less longitudinal velocity (V_0/φ^1) and larger angular velocity ($\omega_0 \cdot \varphi^1$). With this larger velocity it has rotated ($800 \cdot \varphi^1 \approx 1300$). Because it equals almost to 1300 it is located in second quadrant.
- The peripheral vortex will appear third at time (t_3). It has the minimal longitudinal velocity (V_0/φ^2) and largest angular velocity ($\omega_0 \cdot \varphi^2$) Thus with this largest angular velocity it has rotated ($800 \cdot \varphi^2 \approx 2100$). Because it equals almost to 2100 it is located in the third quadrant.

c) Generating a Reverse Wave in 3D with 3 Longitudinal Vortices as Transverse Vortex with a Counterclockwise Direction

If we connect in 2D the times shown above ($t_1 - t_2 - t_3$) (in first, second and third quadrant) we will obtain transverse vortex in clockwise direction.

Result: In 2D ($t_1 - t_2 - t_3$) the Reverse wave has clockwise direction.

The reason is that we connect **combined** (in 3D), the times shown above ($t_1 - t_2 - t_3$) placed in 2D (x,y) plus height (H) along z-axis, we will get a transverse vortex in a **counterclockwise direction**.

- More details reason is that the first point (t_1) that has located in first quadrant of 2D plane (x,y) is raised in minimal height (H_0) along z-axis.
- The second point (t_2) that has located in second quadrant of 2D plane (x,y) is raised in bigger height ($H_0 \cdot \phi^1$) along z-axis.
- The third point (t_3) that has located in third quadrant of 2D plane (x,y) is raised in biggest height ($H_0 \cdot \phi^2$) along z-axis.

Result: In 3D ($t_1 - t_2 - t_3$ plus $H_1 - H_2 - H_3$) the Reverse wave has a counterclockwise direction.

This act uses combined location in 2D in (x,y) and height ($H_0 \cdot \phi^n$) ($n=1,2,3$) along z-axis.

d) Reverse Wave is Accelerating Transverse Vortex with a Counterclockwise Direction

When we compare the distance in 3D between $t_1 - t_2 - t_3$ including height ($H_0 \cdot \phi^n$, $n=1,2,3$) along z-axis we will notice that: $D(t_3 - t_2) = D(t_2 - t_1) \cdot \phi$.

Thus, every next distance is (ϕ) times more than the previous one. The reason is that the transverse vortex as Reverse wave has a **constant positive acceleration (ϕ)** and this transverse vortex is **accelerating** [6] (Figure1b).

Result: The Reverse wave in 3D is accelerating with constant positive acceleration (ϕ).

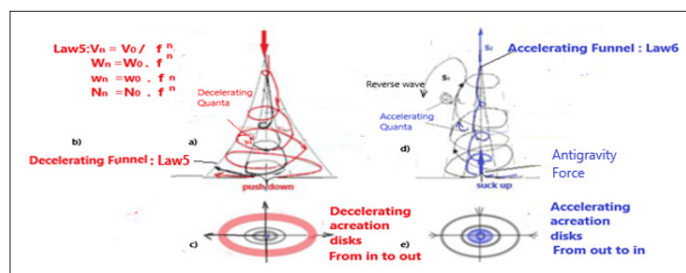


Figure1. Funnel

a) Decelerating Funnel; b) Law5; c) Decelerating accretion disk; d) Accelerating Funnel; e) Accelerating accretion disk.

e) Decelerating Accretion Disk

Obviously, in decelerating Funnel the longitudinal structure in 3D along z-axis of the current velocities (accelerations) is perpendicular to the transverse structures in 2D of the current transverse amplitudes (radii) of the transverse loops (Figure 3).

- When the accelerating Funnel pulses at an only 1 moment

in Time (*where $T = \text{constant}$*), a photography of series of concentric circles is made in 2D. They are arranged non-linearly and perpendicular to the z-axis at every point along it in 3D Space. When the Funnel contracts, it **emits** concentric circles (nested within one another) outward from the Funnel. Since the Funnel emits "decelerating quanta," the distance between the circles is smaller near the center of Funnel and increases as one move outward. When the Funnel elongates, it **sucks** the concentric circles inward toward itself. Since the Funnel absorbs "acceleration quanta," the distance between the circles is greater near the center of Funnel and smaller further away.

These non-linearly spaced circles are referred to as "accretion disks in Space"[6].

Result: The longitudinal acceleration (positive or negative) is reason for "Accretion disks in Space."

Definition: "Accretion disks in Space" (S) refer to a photo of 3D series of all concentric circles which (spaced non-linearly) are oriented perpendicular to the z-axis at every its point and is generated in 1 moment of time in $T = \text{constant}$.

- Taking a cross-section at 1 point on the z-axis (where S is constant) reveals a series of non-linearly spaced, concentric circles in 3D Space. Over time (T), this series of concentric circles, generated at a constant spacing ($S = \text{const}$), traces out structures known as 3D" Accretion disk n Time "[6].

Result: The transverse acceleration (positive or negative) is reason for "Accretion disks in Time" (T).

Definition: "Accretion disks in Time" (T) refer to a photo of 2D series of (non-linearly spaced) concentric circles, centered around an only 1 point of z-axis and perpendicular the z-axis which generate in $S = \text{constant}$.

f) Nonlinearly Accretion Disks

The accretion disk contains circles inscribed in each other arranged nonlinearly. Since the decelerating accretion disk repels nonlinearly in the direction from the center to the outside, the circles are also rarefied in the direction from the center to the periphery.

Result: In the accretion disk, which has negative acceleration and repels from its center to outside, the distance between circles decreases in the direction from periphery to its center. Therefore, in the deceleration accretion disk, the circles are non-linearly arranged and are rarefied to the periphery and condensed in the center.

This result is perceived as a distortion of Space.

Result: The distortion of the Space around the entire decelerating Funnel is a result of nonlinear accretion disks and negative (longitudinal or transverse) acceleration of the longitudinal vortices.

We saw earlier that the 3D configuration at the end of the decelerating Funnel is as follows (Figure 1a): At the center, the relatively fastest longitudinal vortex has the maximum longitudinal velocity ($V_{1, \text{max}}$), minimum angular velocity ($\omega_{1, \text{min}}$),

and maximum height ($H_{1, \max}$) along the z-axis, while the spiral length L remains constant. It is the first to pierce the real vacuum at time (t_1). Further out, the relatively slower longitudinal vortex has a lower longitudinal velocity ($V_2 = V_1/\varphi$), higher angular velocity ($\omega_{2, \varphi}$), and lower height ($H_{2, \varphi}$) along the z-axis, while the length L remains constant. It arrives second at time (t_2). And so on. At the periphery, the slowest longitudinal vortex has the minimum longitudinal velocity ($V_{n, \min} = V_1/\varphi^n$), maximum angular velocity ($\omega_{n, \max} = \omega_1/\varphi^n$), and minimum height ($H_{n, \min} = H_1/\varphi^n$) along the z-axis, while the length L remains constant. It arrives last at time (t_n).

Therefore, we depict final section in 3D (in plane 2D plus z-axis) of decelerating Funnel. These decelerating accretion disks will look like a bowl concave in the center (z) [5,6].

Result: A bowl concave in the center is 3D appearance of series of decelerating accretion disks.

Law6 For Accelerating Vortex, Accelerating Funnel and Accelerating Accretion Disk

a) Law6 for volume 3D

The accelerating vortex in 3D is described by a multitude of 4 nonparametric equations in which: longitudinal velocity (V) increases in (n) portions (φ^n) times, the amplitude (W), the angular velocity (ω), and the number (N) of transverse vortices in an (n) wheel decrease to zero in (n) portions (φ^n) times:

$$V - V_0/V = +1,$$

$$W - W_0/W = -1,$$

$$\omega - \omega_0/\omega = -1,$$

$$N - N_0/N = -1,$$

where the linear velocity V_0 is the starting value of V_n , amplitude of transverse vortex W_0 is the starting value of w_n , angular velocity ω_0 is starting value of ω_n , number N_0 is starting value of n_n , the roots v_n , w_n and ω_n , n_n are expressed as: $v_n = (\varphi^n) \cdot V_0$, $w_n = (1/\varphi^n) \cdot W_0$, $\omega_n = (1/\varphi^n) \cdot \omega_0$, $n_n = (1/\varphi^n) \cdot N_0$; (φ) is a Golden proportion fulfilled the requirement: $\varphi - (1/\varphi) = 1$ [4,5].

The v_n , w_n and ω_n , n_n are periodic roots with period (n), v_n , w_n are mutual orthogonal that fulfill the orthogonal requirement: $v_n \cdot w_n = V_0 \cdot W_0$; v_n , ω_n are mutual orthogonal that fulfill the orthogonal requirement: $v_n \cdot \omega_n = V_0 \cdot \omega_0$; $n = 0 \div \infty$; the roots v_n , w_n , ω_n and n_n are expressed as: $v_n = (\varphi^n) \cdot V_0$, $w_n = (1/\varphi^n) \cdot W_0$, $\omega_n = (1/\varphi^n) \cdot \omega_0$, $n_n = (1/\varphi^n) \cdot N_0$.

The first positive root of the first equation is: $v_1 = \varphi \cdot V_0 = 1,62 \cdot V_0$.

The first positive root of the second equation is: $w_1 = (1/\varphi^n) W_0 = 0,62 \cdot W_0$.

The periodic roots of the first equation are obtained from the expression: $v_n = V_0 \cdot (v_{n-1} + v_{n-2})$. The periodic roots of the second equation are obtained from the expression:

$w_{n-2} = W_0 (w_n - w_{n-1})$, (Figure 2) [4-6]. A nonparametric equation do not depend on external parameters and it depend only on Golden ratio (φ) [7].

Definition: For Accelerating Vortex the Golden Proportion (φ) is Proportional to the Ratio (v_n/w_n), or $(\varphi^n)^2 = (v_n/w_n)$.

b) Form of Accelerating Funnel

Result: An accelerating longitudinal vortex sucks in the Primary accelerating vorting (as accelerating quanta) from the environment towards itself.

Accelerating quanta have positive acceleration and this cause suction.

Result: Two accelerating longitudinal vortices in close proximity attract each other.

The reason is suction of transverse accelerating vortices (accelerating quanta) in close proximity, the result is that longitudinal accelerating vortices attract each other.

Result: An accelerating longitudinal vortex sucks in the Primary accelerating vorting (accelerating quanta) from the environment towards itself.

Therefore a few accelerating vortices also attract each other

Result: Many accelerating vortices also are sucked each other and are packed in accelerating Funnel.

c) Transformation

The accelerating vortex stretches vector velocity to infinity (Figure 2).

Result: The accelerating vortex transforms maximal vector velocity (v_1) from starting point (n_1) to a transverse wheel with minimal (almost zero) radius (w_n) in final point (n_n), where the transverse wheel is perpendicular to vector velocity.

Thus the angular velocity (ω_n) and radius of rotating wheel (w_n) become minimal (almost zero) in (n_n) step (Figure 1).

Result: The angular velocity (ω_n) and radius of rotating wheel (w_n) become minimal (almost zero) in (n_n) step.

Therefore the accelerating vector stretches velocity at the end and generates Time (T).

Result: In final step (n_n) the fastest vortex stretches the vector velocity (v_n) to infinity. Thus, it generates Time (T) [4,5].

For comparison: The decelerating vortex transforms longitudinal Velocity as Time (T) to perpendicular transverse Amplitude as Space (S).

Result: The accelerating Funnel transforms a transverse Amplitude as Space (S) to the perpendicular longitudinal Velocity as Time (T).

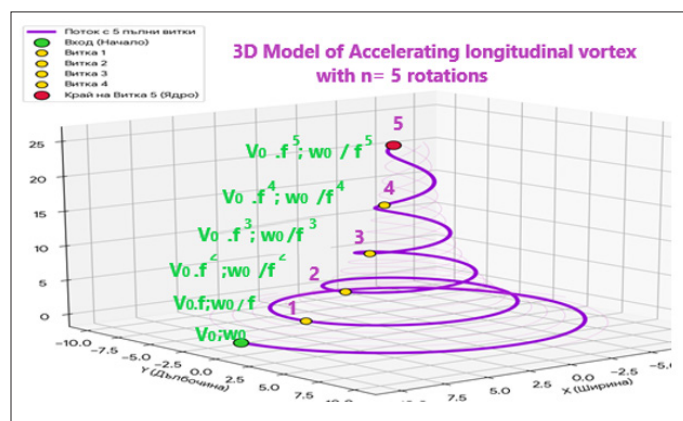


Figure 2: Accelerating longitudinal vortex: Law6

Number of rotations $n=5$; Starting velocity $=V_0$; Current velocity $= (V_0 + \varphi^n)$.

Packing of Accelerating Funnel

The construction of accelerating Funnel is following: The fastest longitudinal vortex is inserted in the center of Funnel. This means that the fastest longitudinal vortex has the greatest positive acceleration or maximal suction. The slower longitudinal vortex is wound outside of Funnel.

This means that slower longitudinal vortex has a less positive acceleration or less suction and so on. The slowest longitudinal vortex is twisted outside in the periphery of Funnel. This means that the slowest longitudinal vortex has the least positive acceleration or minimal suction (Figure 3).

Result: In final step (nth) the fastest vortex, inserted in center of accelerating Funnel stretches the vector velocity (vn) to infinity. Thus, it generates Time (T).

For comparison: The fastest vortex decelerating Funnel transforms Velocity as Time (T) to perpendicular Amplitude as Space(S).

Result: The accelerating Funnel transforms Amplitude as Space (S) to perpendicular Velocity as Time (T).

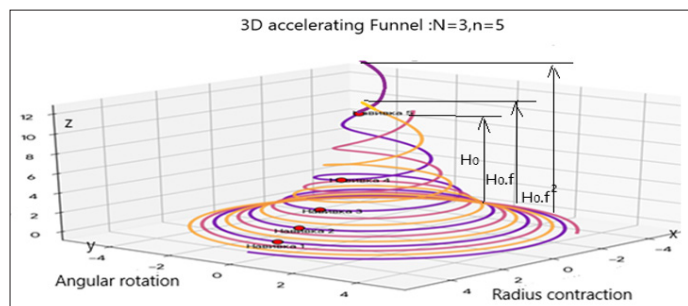


Figure 3: Accelerating longitudinal Funnel; Number of accelerating vortices $N=3$; Number of rotations $n=5$; Height H_0 ; $H_0.\varphi$; $H_0.\varphi^2$ while $S=\text{const}$.

c) Accelerating Accretion Disk

Obviously, the longitudinal structure of the current velocities (accelerations) of the accelerating Funnel is perpendicular to the transverse structures of the current transverse amplitudes (as radii) of the transverse accelerating vortices (as loops). Therefore we can cross an accelerating Funnel transversely and obtain a series of transverse circles inscribed in each other (Figure 3).

Result a): The acceleration accretion disks in Space are series of perpendicular section in 3D of every point of z-axis in 1 moment of time ($T=\text{const}$).

Result b): The accelerating accretion disks in Time are series of circles in 1 plane in 2D which are perpendicular to z-axis in only 1 its cross section ($S=\text{const}$)

The accretion disk contains circles (inscribed in each other) arranged nonlinearly. Since the accelerating accretion disk **attracts** nonlinearly in the direction from the outside

(environment) to the center, the circles are **thicken** in the direction to the center.

Result: In the accretion disk, which has positive acceleration and sucks from outside to its center, the distance between circles decreases in the direction from periphery to the center.

Therefore, in the acceleration accretion disk, the circles become some denser in the direction from periphery to the center.

If we depict it in 3D (including to z), the accretion disks of accelerating Funnel will look likes to bowl convex to the (z) in the center .

Result: The accelerating accretion disk in 3D (plus z) has the appearance of a bowl convex in the center. The temporal (in $S=\text{const}$) and the spatial (in $T=\text{const}$) structure of accretion disk cause a distortion of Space.

These results are perceived as a distortion of Space around accelerating Funnel

Result: The nonlinear arrangement of the circles in the accelerating accretion disks causes a distortion of the Space around the entire accelerating Funnel.

Results

a) In the Temporal (in $S=\text{const}$) Structures

In the temporal (in $S=\text{const}$) structures of accretion disks the reason for Gravitational repulsion or attraction is the current negative or positive acceleration (!) in 2D plane perpendicular to z-axis but not the Distortion of Space.

Result: In the temporal (in $S=\text{const}$) structures of accretion disks the reason for Gravity Forces is acceleration of transverse Primary vortices (Quanta) located in 1 of 2D plane perpendicular to z-axis but not the Distortion of Space [5].

b) In the Spatial (in $T=\text{const}$) Structures

In the spatial (in $T=\text{const}$) structures of accretion disks the reason for Gravitational repulsion or attraction is the current negative or positive longitudinal acceleration (!) of longitudinal vortex in 3D volume along z-axis but not the Distortion of Space [5].

Result: In the spatial (in $T=\text{const}$) structures of accretion disks the reason for Gravity Forces is the acceleration of longitudinal vortices in 3D Funnel along z-axis, but not the Distortion of Space.

c) Comparison

The Modern Theory of Gravity claims that the cause of Gravitational repulsion or attraction is in a nonlinear Distortion of Space. The Theory of new Axioms and Laws proves that the cause of Gravitational repulsion or attraction is consists in the current negative or positive accelerations of the transverse (W) or longitudinal (V) velocity (according Law5, Law6).

Result: The Distortion of Space cannot be the cause of the Gravitational Force because its Distortion is a static end-arrangement of Space, whereas the cause lies in the dynamics.

Therefore the reason for Gravitational Force is the current acceleration but not the Distortion of Space. The Distortion of Space is only 1 of the results caused by acceleration.

d) Accelerating Funnel Traces the Time (Law5)

Each longitudinal vortex in the decelerating or accelerating Funnel moves and finishes at different times (T_i). Each spiral in Funnel has constant length (S_i) in Time (T_i) in (n) steps. Thus, it moves with a nonlinear speed.

In case of accelerating vortex velocity in (n_{th}) step is: ($V_0 \cdot \varphi^n$), where (V_0) is maximal velocity in starting of spirals. When in Funnel have (M) number spirals they are arranged in Space in the following way: The central vortex has a maximum velocity (V_{0max}). Thus, the central vortex arrives first at time ($T_0 = T_{min}$) of the entire package of Funnel. After it, the outer vortex arrives late, at time ($T_1 = T_0 \cdot \varphi^1$), and the more outer vortex arrives later, at time ($T_2 = T_0 \cdot \varphi^2$), etc. and finally, the most peripheral vortex appears last, at time: ($T_M = T_{max} = T_0 \cdot \varphi_M$).

Result: In accelerating Funnel Space in 2D is collapsed while the longitudinal vortices in 3D (along z- axis) is expanded and generates Time.

Therefore, the central spiral is fastest and arrives first with ($T_0 = T_{min}$), then the outer spiral is slow and arrives after (T_1), the more external vortex is slower and arrives (T_2) and so on the final spiral is slowest and arrives last (T_M). Thus, the central fastest vortex really generates Time (Figure 1d) [5,6].

e) Decelerating Funnel Opens a Space (Law5)

Each spiral in Funnel moves along its constant length (S_i) in Time in (n) steps. Thus, it moves with a nonlinear velocity. In case of decelerating vortex if starting velocity is (V_0), the velocity in (n_{th}) step is: (V_0/φ^n). In decelerating Funnel each transverse vortices in 2D (x,y) open the Space in direction to exit of Funnel.

For decelerating Funnel along loops in 2D (x,y), the current radius (R_i) of loops increases (φ^i) times where $i=0-n$. Thus the length of loops become longer and longer. The angular speed of vortex (ω_i) along circle of transverse loop increases (φ^i) times where $i=0-n$. It increases so much that it tends to infinity. In this way it opens the Space (Figure 1a) [5,6].

Result: In decelerating Funnel longitudinal vortex as Time is collapsed while the transverse vortex in 2D (along x, y plane) is expanded and generates Space.

The expansion of Space is accompanied by the generation of a transverse vortex in the opposite direction (Reverse wave), which constitutes proto-matter. The reason for this is that the central vortex is the tallest (H_{max}) while the others (M) decrease in height (H_{max}/φ^M).

The Unique Time-Space With $S=Const$ Formed by Accelerating and Decelerating Longitudinal Funnel

a) The Accelerating Funnel (Law6)

The center of accelerating Funnel is convex up by sucking along the z-axis. Thus the front of the accelerating Funnel is not flat

but it is arrow-shaped to up. In the center vortex is the first (T_{min}), the fastest (V_{max}), the heighest (H_{max}) and with minimal number of loops (n_{min}).

Result: The front of the accelerating Funnel is arrow-shaped to up due to sucking up.

Let us emphasize for the central spiral which passes by a constant path that: $S_{const} = T_{min} \cdot V_{max}$.

For periphery vortex which is the last (T_{max}), the slowest (V_{min}), the shortest (H_{min}) with maximal number of loops (n_{max}). It is interesting that the peripheral spiral also passes a constant path: $S_{const} = T_{max} \cdot V_{min}$.

The reason is that each of the longitudinal vortices that are inserted one in an other and form longitudinal Funnel appears an one and the same spiral which has one and the same length (S_{const}). This spiral represents a single spring that compresses or stretches but always maintains the same length (S_{const}). This relates to accelerating and decelerating Funnels.

Result: Each longitudinal Funnel is formed by one and the same vortex similar to a single spiral (as spring) that compresses or stretches and has different height ($H_{variable}$) but always maintains the same length (S_{const}).

The result is that the Funnel form very unique Time-Space with constant length of spirals $S=const$ [5].

b) The Decelerating Funnel (Law5)

The similar is the dynamic also the decelerating Funnel. Let describe the **central** spiral which has relative maximal velocity (V_{max}). It arrives for minimal time (T_{min}) and has the biggest height (H_{max}) with minimal number of loops (n_{min}): $S_{const} = T_{min} \cdot V_{max}$.

For periphery vortex which is the slowest (V_{min}) and arrives the last (T_{max}). It has the shortest height (H_{min}) with maximal number of loops (n_{max}). Thus, the **peripheral** spiral also passes a constant path: $S_{const} = T_{max} \cdot V_{min}$.

But for decelerating Funnel there is some difference. Since in the accelerating Funnel front **convex up** (by sucking up) in decelerating Funnel the front is **concave down** (by pushing down).

Result: For the decelerating Funnel the front is concave down due to pushing down.

Despite their differences, the accelerating and decelerating Funnels form a unique Space-Time with constant length of spirals ($S=const$) [5].

Conclusions

A longitudinal vortex is like a spiral or a spring that can compress or stretch and vary in height (H), yet it always retains the same length (S) [6].

Conclusion: Each one longitudinal Funnel is formed by one and the same vortex similar to a single spring that compresses or stretches and has different height (H_{var}) but always maintains the same length (S_{const}).

The result is that the Funnel form very unique Time-Space with constant length of spirals $S=\text{const}$.

Conclusion: Inside longitudinal Funnel exists unique Time-Space in which the length (S) of all spirals are constant (S_{const}).

The reason is that Funnel is constructed by one and the same vortex like one single spiral which compresses or stretches so that it has always the constant length (S_{const}). Thus, this Space-Time creates a Gravitational field around itself. That is why this Space-Time is called Gravitational Space-Time.

Conclusion: The Space-Time with parameter $S=\text{const}$ generates Gravity waves (accretion disks) and Gravity Forces around itself and for this is named Gravity Space-Time.

We humans live, exist, perceive, and think within a Space-Time of transverse vortices with parameter: $T=\text{const}$. The reason is that humans are composed of transverse waves.

That is why we cannot perceive this new and unique Space-Time, with another parameter: $S=\text{const}$. The reason is that this Space-Time is formed by longitudinal waves. And, moreover, these longitudinal vortices are strongly nonlinear [7].

Conclusion: The Gravitational Space-Time is completely unknown and unknowable to humans.

A structure in which live the humans is characterized by the parameter $T=\text{const}$, is composed of transverse vortices. It is fundamentally different from a Gravity structure characterized by the parameter $S=\text{const}$, composed of longitudinal vortices. This Space-Time called Gravitational field it cannot be perceived by humans.

The reason is that the human body is generated within the material structure of transverse vortices. The human mind is also linked the same transverse waves and think through them.

The result is that the human mind is incapable of thinking in the unique Time-Space of Gravity by longitudinal vortices.

References

1. Markova V (2005) The other axioms (Monograph, Book 2). Nautilus, Sofia.
2. Markova V (2017) Extended Field Theory. New Axioms, Laws and consequences. IOSR-Journal of Applied Physics 9: 59-66.
3. Markova V (2017) A generator using a tube of longitudinal accelerating open vortices nested one inside the other for positive feedback. 3th International Conference on High Energy Physics, Rome, Italy, Dec.11-12, 2017.
4. Markova V (2018) About the new axioms and laws. 5th International Conference on Theoretical and Applied Physics, Vienna, Austria, July 02-03, 2018.
5. Markova V (2019) Modelling of Two Different Space-times, Based on Knowledge of New Axioms and Laws. 2nd Global Summit on Physics, Paris, France, Sept. 26-27, 2019.
6. Markova V (2021) The Gravity Funnels, formed by the longitudinal vortices, according to the new Axioms and Laws. Adv Theo Comp Phy 4: 61-68.
7. Markova V (2025) Causal Description of Natural System According Theory of New Axioms and Laws. Advances in Theoretical & Computational Physics 8: 01-07.

Copyright: © 2026 Valentina Markova. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.