the general science journal

Classical relationship of Gravitational and Charged fields

Let a room containing two observers represent an inertial frame of reference. They will measure the speed of light as it propagates across the room in one direction to be travelling at speed ***c***, a finite speed. This is an average of the speeds in opposing directions. A true one-way measure of the speed of light is not attainable.

If one observer changes his position to a different speed within the room the fact that he cannot measure a change in the speed of one directional light does not mean he hasn't changed his speed relationship with the speed of that light. Intuitively and logically he has. One-way speed of light remained constant while the observer was accelerated to a new speed.

It required a force to alter the speed relationship. Why not look at the converse idea? Perhaps changes to a field of space that affect the speeds of light are changes that can alter our position (relative to a different unaffected space) so that we retain our speed relationship with the changing field. We can only resist this change from our relative position with force which causes us to undergo change in speed relationship as the speeds of light change.

My submission is an exercise in which we assume we can detect these changes in speeds and then follow a logical line of reasoning using only elementary principles of physics to see where it takes us. I hope to demonstrate a concept that leads to an intuitive and symmetrical interplay between gravitational and charged fields. The concept of primary and non-primary directional space.

Linear Directional space and particle segments

To illustrate the concept we use abstract circular bodies ***A*** and ***B***, each made up of an internal particle that travels back and forth within.

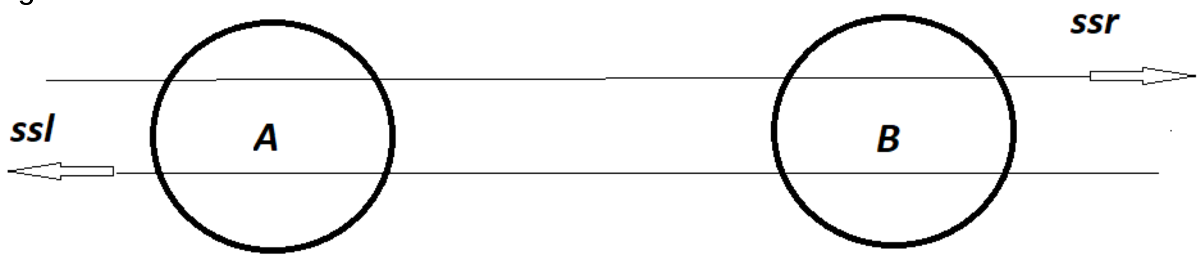
Fig 1

Particle travel is divided into segments of direction. Particle segment right (***psr***) and particle segment left (***psl***).

Bodies are used as abstract tools and not intended to offer insight into the structure of matter.

In a linear 1-dimensional space, no matter what frame of reference is chosen, light travels in two opposing directions at speeds measured to be ***c*** and ***-c***. Since the property of space determines these speeds, let's define these speeds as 'the speeds of space'.

Fig 2



Directional space right is speed of space right (***ssr***)

Directional space left is speed of space left (***ssl***).

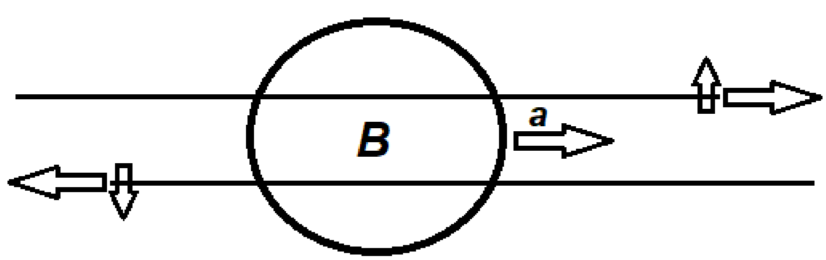
Let internal particles travel at the speeds of space. The mass of each body is 1.

Part 1 Balanced linear changing fields and fall forces

If we initially are in the same position as ***B*** and a force in the left direction pushes or pulls us away, we will have changed our speed relationship with the speeds of space. Suppose we can view these changes.

As we feel the stress of the force, we view ***ssr*** increasing, ***ssl*** decreasing and ***B*** accelerating away from us under no external forces.

Fig 3 Our view of ***B*** and space as we accelerate left



We observe that the rate of increase of ***ssr*** is in sync with the rate of decrease of ***ssl***. Let’s call this **balanced change**.

We see ***B*** accelerating away from us under no external forces (under no stress). Acceleration with no internal stress is what we observe in a gravitational field.

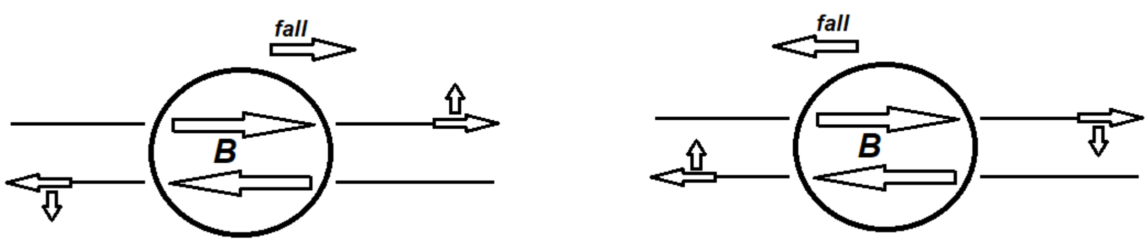
Could it be that gravitational fall is the attempt of bodies to maintain its speed relationship with the speeds of space?

If so, we list 3 factors to a gravitational field.

1) external forces needed to resist fall.
2) no internal stress as bodies fall.
3) balanced changes to the speeds of space create fall

Suppose we can take a field and alter the speeds of space. We remain outside the field and view the affects.

Fig 4 ***ssr*** increases ***ssl*** decreases ***ssr*** decreases ***ssl*** increases



In fig 4 we remain stationary (outside the field so as not to be influenced by it) as the speeds of space change in balance synchrony.

As ***ssr*** increases and ***ssl*** decreases ***B*** will fall right.

As ***ssr*** decreases and ***ssl*** increases ***B*** will fall left.

Fall acceleration is proportional to the rate of balanced change of the speeds of space.

<u>Direction of fall</u>

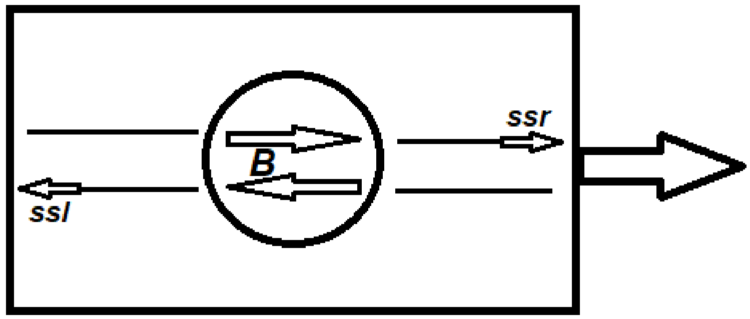
Increasing speed of space - **Fall-Forward** Fall direction is in the direction of the speed of space.

Decreasing speed of space - **Fall-Back** Fall direction is in the opposite direction of the speed of space.

If we can change our position within space by force lets imagine space itself in change.

**The converse of fig 3		Accelerating a section of space**

Fig 5



The converse of fig 3 is our surrounding space itself being accelerated right while we are held in our position by a force which does not allow us to fall with the accelerated space. We can say that we have been detached from our original inertial frame of reference by force as space accelerates away from us.

ssr, ***ssl*** and ***B*** are all accelerating to the right. ***psl*** and ***psr*** stay aligned within ***B***. ***B*** retains attachment to its space as it moves right.

From our viewpoint within the field as we are prevented with force from going along with the accelerated space, we detect ***ssr*** to be increasing in speed, ***ssl*** decreasing in speed and maintaining balance, and ***B*** falling right under no external forces. Equivalent viewpoint as in fig 3.

Speed changes to the speeds of space only occur if the section of space is accelerating.

A balanced changing field (a gravitational field) then is equivalent to an accelerated motion of space.

Particle travel speeds, though they are changing, do not change relative to their accelerating space. They retain their speeds relative to a moving platform.

The movement of ***B*** in fig 5 maintains its speed relationship with the speeds of space. An observer in fall should not be able to determine that its space is accelerating. ***B*** feels to be in a flat field. Its viewpoint is relative and so ***B*** views bodies outside its accelerating space to be accelerating in the opposite direction.

(For reasons that will later become apparent space will be shown to be in fall by an arrow that appears to be pulling)

Forces and acceleration   Review of properties of mechanical forces

1 - Forces cause detachment of the body from its space to a new speed relationship with the speeds of space. To a new inertial frame of reference.

2 - Forces to a body alter the momentum of the body by rearrangement of lengths of internal particle segments, but without changing the speeds of the particles as occurs with gravitational fall. The greater the force applied the greater the ratio of opposing particle segments is changed. And length contraction of the accelerated body occurs.

Fig 6

3 - Time segments of particle travel is shifted causing dilation of time.

4 – mechanical forces cause internal stresses of compression or tension

Fig 7   To accelerate Body ***A*** right we can push or pull.

A push by external force right will initially contract ***psl***, putting the body under compression. The body detaches from its space and is immediately followed by expansion of ***psr*** that accelerates the body right alleviating the stress**.**

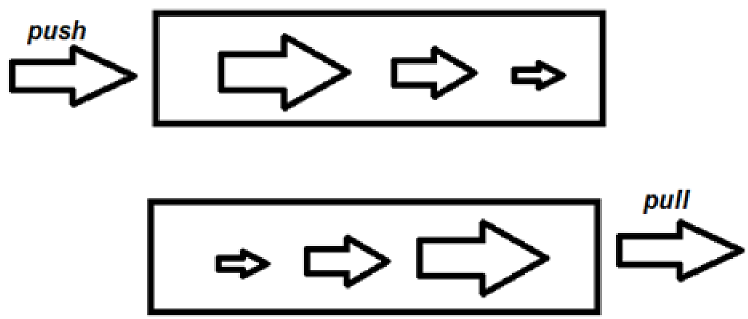
A pull by external force right will initially expand ***psr***, putting the body under tension and causing detachment. It is immediately followed by a contraction of ***psl*** that accelerates the body right alleviating the stress.

Stresses on particle segments – from fig 7

1- Particle segment 1 undergoes compression and contraction.
2- Particle segment 2 undergoes compression and expansion
3- Particle segment 3 undergoes tension and contraction
4- Particle segment 4 undergoes tension and expansion

5 - Mechanical forces have a point of entry and a gradient of forces along a body that is being pushed or pulled. Internal stresses are stronger near the entry area.

Fig 8 Gradient of forces during acceleration by mechanical force



Push causes compressive forces within which get stronger the closer to entry.

Pull causes tension forces within which get stronger the closer to entry.

6 - Particle segment endpoints define the boundaries of the body. Push and pull forces cause contraction or expansion of segments and thereby altering the locations of endpoints which causes acceleration.

Mechanical forces in comparison to Fall

Fig 9

Mechanical forces – Point of entry - gradient of forces - internal stresses - changes to particle travel lengths without changes in speeds - time shifting - changes in the bodies speed relationship with the speeds of space

Fall - No obvious point of entry – no internal stresses – no time shifting – bodies retain speed relationship to balanced changes in the speeds of space - no true changes to particle travel lengths and speeds are occuring since the body is riding on a moving platform, an accelerated movement of space (fall).

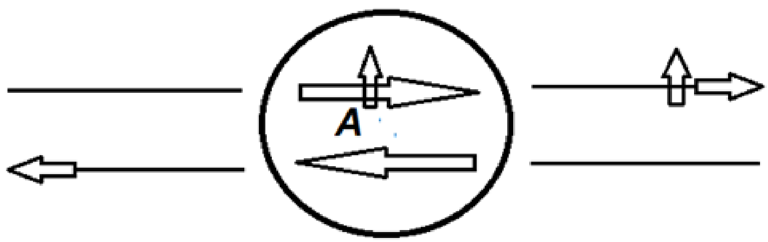
Part 2 Unbalanced change in the speeds of space

What if only one directional space was to change. A misalignment of particle segments is occurring. Does fall occur?

Primary space and opposite viewpoint

Primary attachment - If a body maintains its position in one of the speeds of space, then two outcomes can occur depending on choice. Fall or no fall.

Fig 1 Let ***ssl*** be the primary space for ***A***

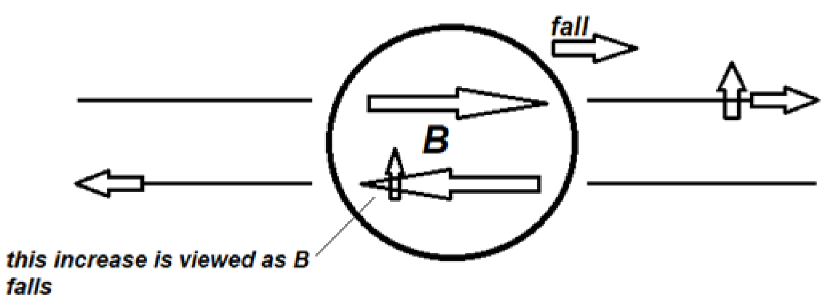


In Fig 1 if ***ssl*** is the primary space then ***A*** will not fall right as ***ssr*** increases.

A is undergoing an increasing speed of its right particle segment.

Now let ***ssr*** be the primary space for ***B***. ***B*** will then retain its position in its primary space. It remains attached to ***ssr*** and falls with the change.

Fig 2



From its viewpoint of fall ***B*** is undergoing an increase of its left particle segment.

If an unbalanced change in particle speed causes a reaction. Then the reactions in Fig 1 and Fig 2 are exactly opposite and depends on the body’s choice of which directional space is primary. What are those reactions?

Misalignment by unbalanced changes to the speeds of space

If two particles within a body are travelling the same length of distance in opposite directions but one is travelling on a platform that falls then their relative distances of travel within the body are skewed.

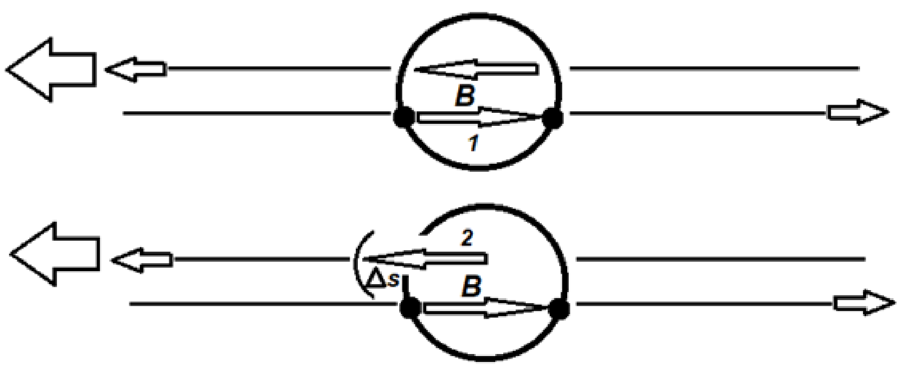
Charged accelerations

Body boundaries are defined by the endpoints of particle travel. Just like in mechanical forces an unbalanced field alters the position of endpoints.

Charged accelerations then may be created by misalignment of particle segments created by unbalanced changes in the speeds of space.

Let an increasing speed of space be primary for ***A.*** Let a decreasing speed of space be primary for ***B***

Fig 3 fall-forward of ***ssl*** with ***B*** in the field. ***B*** is initially stationary. Large arrow on the left indicates a left accelerating left directional space (increasing speed of ***ssl***).



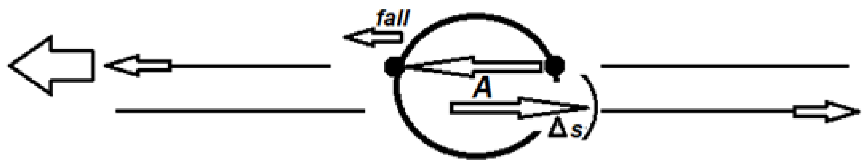
1- ***psr*** travels distance ***d*** on ***ssr*** 2- ***psl*** travels distace ***d*** on a falling ***ssl***

psl has been displaced but ***B*** feels it has been expanded.The misalignment and choice of primary directional space places ***psl***'s endpoint forward left relative to its original left border.

Do particle segments realign to configure to the new speed and undergo the consequential stresses just as they would under a mechanical force? If so then each time the particle travels on its left leg it sets a new speed by expansion. Alteration in particle segment lengths and time shifting should occur each time.

B is being accelerated left by expansion in the direction of fall.

Fig 4 fall-forward of ***ssl*** with ***A*** in the field.

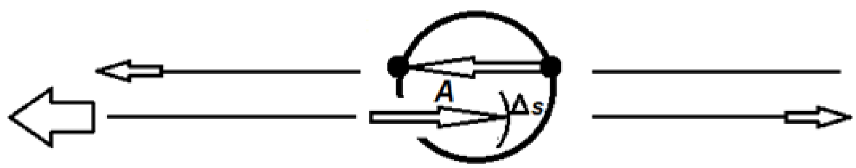


An increasing ***ssl*** is primary for ***A***. ***psl*** and ***A*** stay attached and fall with the change. (in fall ***psl***'s endpoints do not alter boundary locations relative to a falling ***A*** body). From ***A***'s perspective ***ssr*** is accelerating right.

psr travels the same distance but because of ***A***'s fall its forward endpoint is now further right of the old right border. From ***A***'s perspective ***psr*** has been expanded right.

A is being accelerated right by expansion in the opposite direction of fall.

Fig 5 fall-back of ***ssr*** with ***A*** in the field

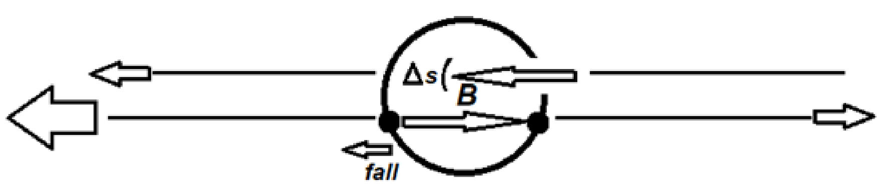


A decreasing ***ssr*** is not primary for ***A***. ***psl*** and ***A*** stay attached to ***ssl***.

Both particle segments are travelling a prescribed distance but ***psr*** is travelling on a left accelerating platform (***ssr***). When it finishes its segment it finishes short of the original right border thus establishing a new boundary to the left of the old one. It is contracted relative to its body.

A is being accelerated left by contraction in the direction of fall.

Fig 6 fall-back of ***ssr*** with ***B*** in the field.



A decreasing ***ssr*** is primary for ***B***. ***psr*** and ***B*** stay attached and fall with the change.

psl does not fall and establishes a new left border to the right of the old one.

B is being accelerated right by contraction in the opposite direction of fall.

We see that a directional space that is undergoing a non-primay change affects particle segment on its space directly. A directional space that is undergoing a primary change affects the particle segment on the opposite side.

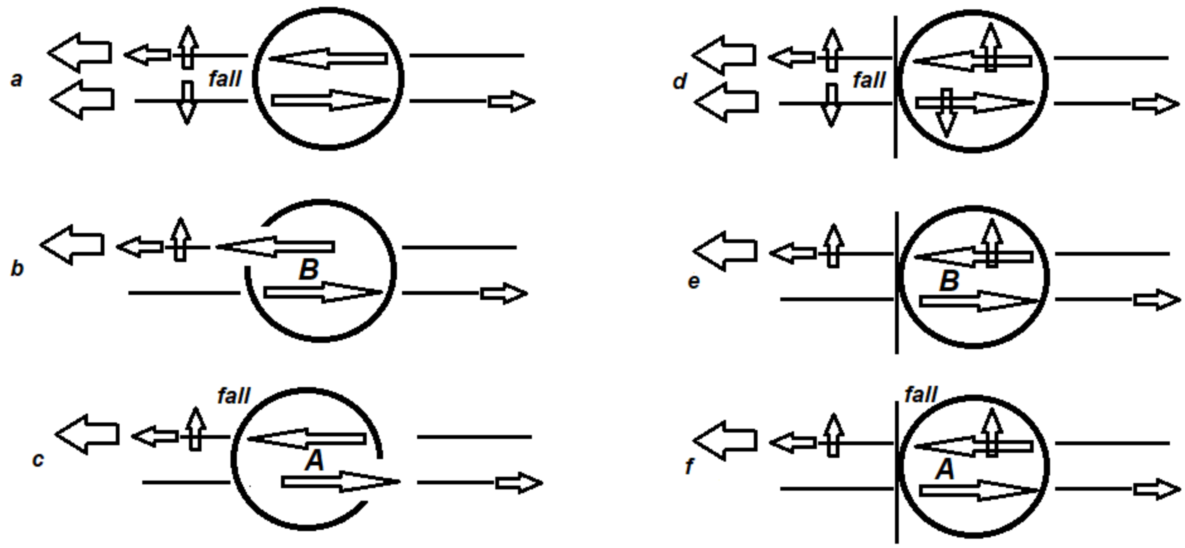
In a charged acceleration on every particle round trip a segment is contracted or expanded causing a jump to a new speed. Detachment and reattachment at a new speed occurs each time.

Fall in a directional space is proportional to its rate of change.

Charged acceleration is proportional to the degree of misalignment in an unbalanced field.

We do not have to have bodies in free fall to determine how they behave in a changing field.

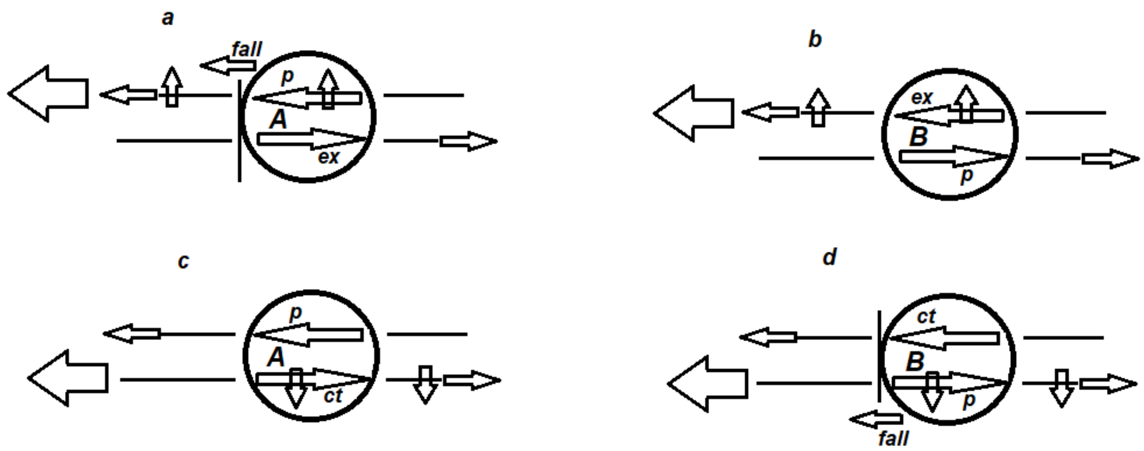
Fig 7



- a- A body in balanced fall - no misalignment - both particle segments fall left
- b- Non-primary misalignment – non-primary ***psl*** of ***B*** expands left
- c- Primary misalignment - ***A*** falls left and non-primary ***psr*** of ***A*** expands right
- d- A body prevented from falling in a balanced changing field - No internal misalignment (except for the force that is preventing fall) - Speed changes to internal particle segments are balanced.
- e- Internal non-primary misalignment – from a primary viewpoint (***B*** and ***psr*** in a flat field) a non-primary ***psl*** is increasing in speed and wants to expand
- f- Internal primary misalignment – from a primary viewpoint (***A*** and ***psl*** in fall) ***psr*** is not decreasing to maintain balance so the body senses ***psr*** to be increasing in speed and wanting to expand

Adding a change   Removing a change

Fig 8   A changing ***ssl***   Bodies are prevented from falling   p = primary



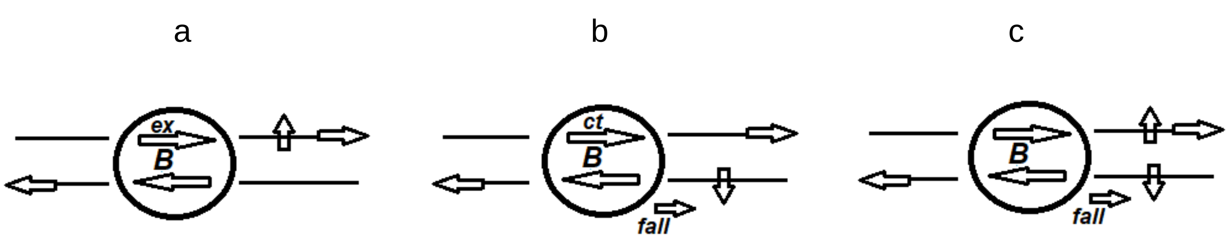
a - An increasing speed is primary for ***A*** and causes fall-forward on ***A*** with ***psl*** and expansion on the opposite segment. Removing a primary increase on a segment in ***A*** removes fall-forward and causes contraction on the opposite segment.

b – An increasing speed is not primary for ***B*** and causes a direct expansion on a particle segment. Removing a non-primary increase on a segment in ***B*** causes direct contraction.

c –A decreasing speed is not primary for ***A*** and causes direct contraction on a particle segment in ***A***. Removing the non-primary decrease on a segment in ***A*** causes direct expansion.

d – A decreasing speed is primary for ***B*** and causes a fallback on ***B*** with ***psr*** and contraction on the opposite segment. Removing the primary decrease on a segment in ***B*** removes fallback and causes expansion on the opposite segment.

Fig 9   Neutralizing ***B*** in a charged field   ex = expansion   ct = contraction



a - increasing ***ssr*** (non-primary for ***B***) causes expansion of ***psr***.

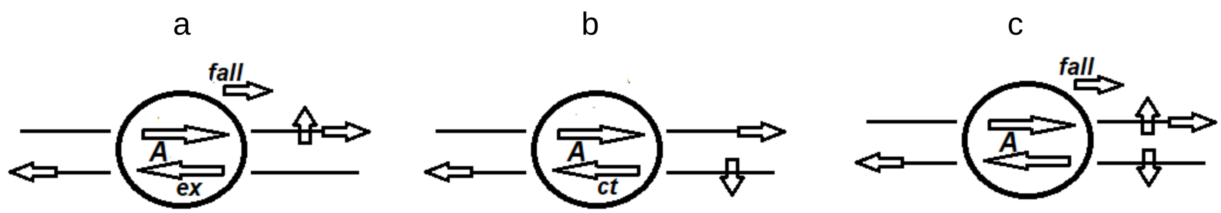
b - decreasing ***ssl*** (primary for ***B***) causes fall and opposite segment ***psr*** to contract.

c – ***psr*** is neutralized in a balanced changing field.

Removing an increasing ***ssr*** (non-primary) in c removes expansion and ***psr*** contracts. ***B*** goes back to b.

Removing a decreasing ***ssl*** (primary) in c removes fall and expands the opposite segment, ***psr***. ***B*** goes back to a.

Fig 10 Neutralizing ***A*** in a charged field



a – increasing ***ssr*** (primary for ***A***) causes fall and expansion of the segment on the other side, ***psl***.

b – decreasing ***ssl*** (non-primary) causes ***psl*** to directly contract.

c – ***psl*** is neutralized in a balanced changing field.

Removing an increasing ***ssr*** (primary) in c removes fall and contracts ***psl***. ***A*** goes back to b.

Removing a decreasing ***ssl*** (non-primary) in c directly expands ***psl***. ***A*** goes back to a.

A law of charged forces

If only one directional space changes and the body falls the body undergoes charged acceleration in the opposite direction of fall. If the body does not fall it undergoes charged acceleration in the direction of fall.

Two types of fall and their reversal

From above we see that

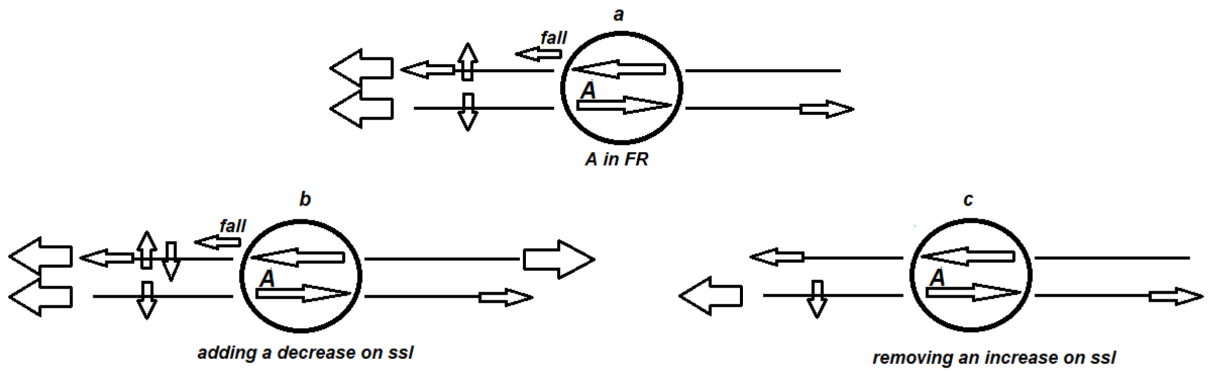
Removing an increase has the opposite effect in direction of charged acceleration than adding a decrease.

Removing a decrease has the opposite effect in direction of charged acceleration than adding an increase.

There are four changes that can be made to a directional space.

1 - Fall-forward   2 - Removal of fall-forward   3 - Fall-back   4 - Removal of fallback

Fig 11   a- ***A*** in a left balanced fall. b- the addition of fallback on ***ssl.***   c- the removal of fall-forward on ***ssl***.



a- ***A*** cannot tell it is in fall and feels itself to be in a flat field. Any response to a similar change to a balanced or flat field should result in an identical reaction.

In b and c the speeds of space are identical. No change in speed is occurring in ***ssl***, and ***ssr*** is decreasing. But the resultant reactions of ***A*** in these fields are opposite.

ssl in b is undergoing two active changes. ***ssl*** in c has had an active change removed.

There must be an underlying process that creates fall. It is not the changing speed that affects particle behaviour but the mechanism of change which when occuring is detectable by particle segments and the affects are maintained.

Can the underlying processes be pull and push forces of space itself?

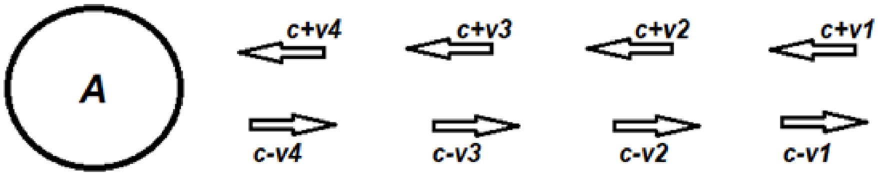
Part 3

Sloped space

How is a gravitational field around ***A*** in balanced change and causing fall?

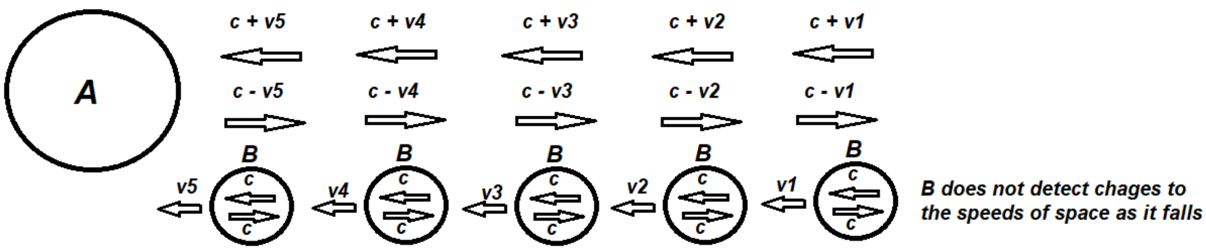
A changing balanced field can be a sloped field.

Fig 1



To maintain its position a body to the right of ***A*** should fall left and increase its speed in an attempt to maintain its speed relationship with the speeds of space.

Fig 2 ***Fall Reference (FR). FR*** is the speed and location at which the falling body matches in speed the changes to the speeds of space.

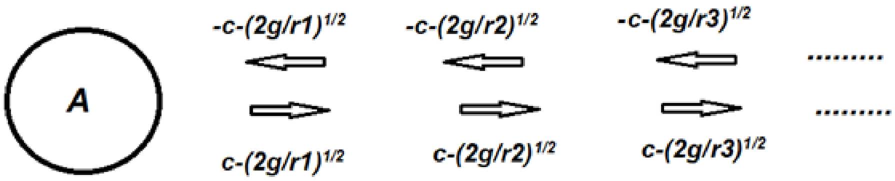


As ***B*** falls it maintains its relationship with the speeds of space. It views its internal particle segments to always be travelling at speed ***c*** in both directions as it falls.

What is ***v***?

Gravitational effect continues to r = infinity. Theoretically a body at infinity with speed 0 will eventually fall and hit the surface of a mass at the fall escape velocity. ***v*** then is $\boldsymbol{(2gm/r)^{1/2}}$.

Fig 3 ***FR*** of ***A*** let mass = 1 for ***A***



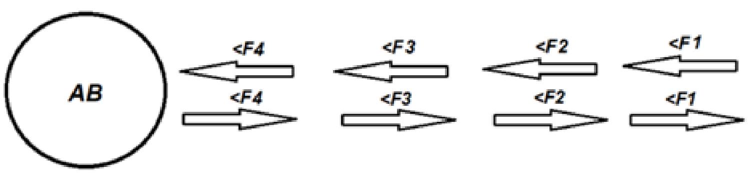
The fall of ***FR*** determines how ***A*** affects space around it. The changes in the speeds of space determines the gravitational fall rate. Acceleration of bodies at any distance ***r*** from ***A*** is $vv' = -(2g/r)^{1/2}(-1/2)(2/g/r)^{-1/2}(-2g/r^2) = -g/r^2$ inwards.

Bodies travelling faster than ***FR*** will continue to get ahead of ***FR***. Bodies travelling slower than ***FR*** will continue to fall behind. But any body in this field no matter what speed and direction it is travelling will be affected by a fall force at its location that is determined by **FR** of ***A***. All changes to internal particle speeds are balanced and no external forces are felt.

Gravitational pull and gradient of forces

We now have a source of entry and gradient of forces much like a mechanical pull. A neutral mass is the entry point of force and it pulls space inwards. The closer to the mass the stronger the pull.

Fig 4 F4 > F3 > F2 > F1



Gradient of forces seem to be aligned part and parcell with the speeds of space.

Surrounding space is under a tension force.There are two types of pulls. The pulls are balanced. The speed of space outwards is pulled from behind. Its gravitational pull is inwards. This pull will be called pull-back.

The speed of space inwards is pulled from the front. Its gravitational pull is also inwards. This pull will be called pull-forward.

There is a pull inwards on directional space inbound and outbound. Opposing particle segments in a body located in a neutral gravitational field are travelling their distances on an inward falling platform. No misalignment occurs during balanced fall.

Splitting of gravitational space and unbalanced sloped fields

Gravitational forces from bodies pull on inward bound directional space and outward bound. How do we get an unbalanced sloped field?

Suppose there were two types of bodies. One pulls on inward bound only. The other on outward bound.

Fig 5

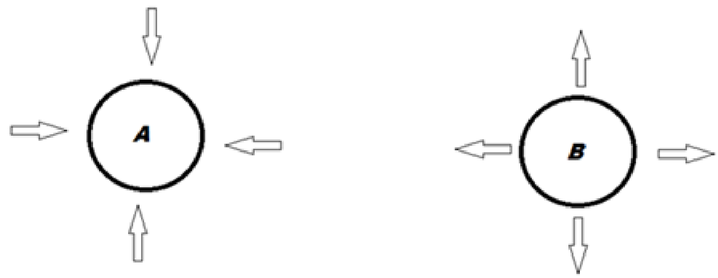
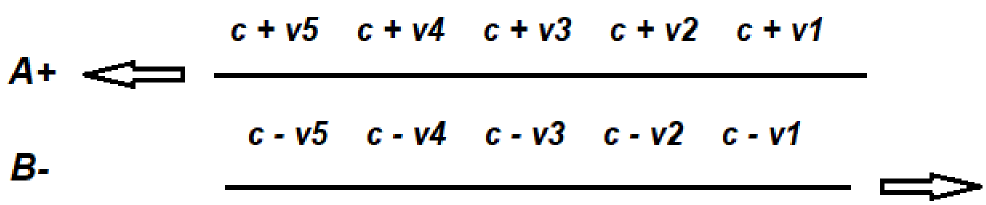


Fig 6 Characteristics of slopes ***A*** pulls inbound ***B*** pulls outbound



A slope (***A+***) Increases the speed of space. It is an ascending field and increases its pulling strength as it ascends. Its fall slope is in the direction of ascending speed of space. It moves inbound space in by pull-forward.

B slope (***B-***) Decreases the speed of space. It is also an ascending field that decreases its pulling strength as it ascends. Its fall slope is in the opposite direction of its ascending directional space. It pulls outbound space in by pull-back.

Both fields have a fall rate determined by their individual ***FR***.

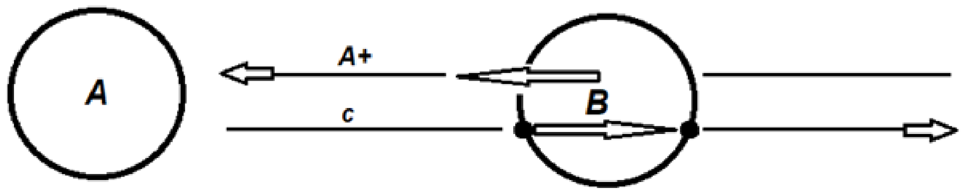
Charged sloped fields

A slope is designated as ***A+***   ***B*** slope is ***B-***

Let ***A+ slope*** be ***A's*** primary field. Let ***B- slope*** be ***B's*** primary field.

We'll consider only fields that originate from the left. Bodies on the left are fixed in their location. Bodies on the right will initially be considered stationary.

Fig 7   ***B*** in ***A***'s field

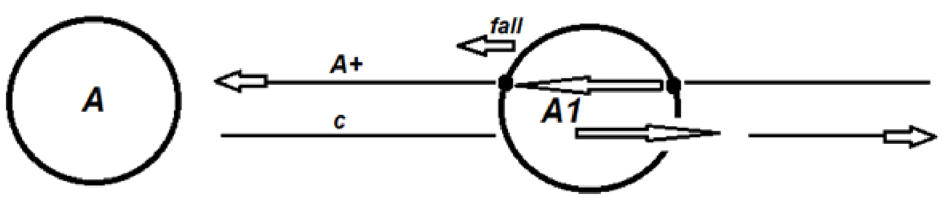


ssl is an ***A+*** slope which is non-primary for ***B***. Particle travel along the left segment is increasing in speed just like it would in an increasing linear directional space. ***psl*** of ***B*** travels the same distance as ***psr*** but on a left falling platform. It establishes a new border to the left of the old one.

B is accelerated left by expansion into ***A*** in the direction of fall.

A non-primary slope affects the segment directly.

Fig 8   ***A1*** in ***A***'s field

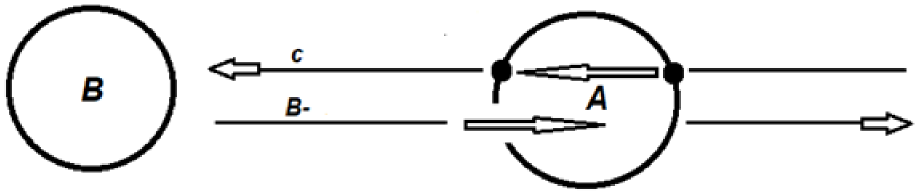


psl and ***A1*** fall along a primary ***A+*** slope. As it falls the right border of ***A1*** is falling left. ***psr***'s normal distance extends beyond this border and establishes a new border to the right of the old one.

A1 is accelerated right by expansion away from ***A*** in the opposite direction of fall.

A primary slope affects particle segment on the opposite side.

Fig 9 ***A*** in ***B***'s field

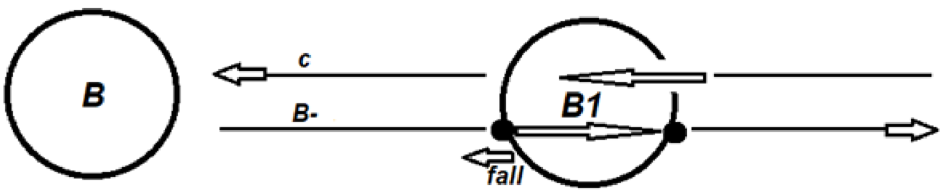


A does not fall. ***psr*** travels the same distance as ***psl*** but on a left moving platform. It establishes a new border left of ***A***'s right border's original position.

A is accelerated left by contraction towards ***B*** in the direction of fall.

A non-primary slope affects the segment directly.

Fig 10 ***B1*** in ***B***'s field



psr and ***B1*** fall along a ***B-*** slope. ***psl*** is not in fall and does not reach the left border. Its segment establishes a new left border to the right of the old one causing right acceleration.

B1 is accelerated right by contraction away from ***B*** in the opposite direction of fall.

A primary slope affects the segment on the opposite side.

We do not have to have bodies in free-fall to determine behavior. The affects of addition and removal of slopes are not dependent on motion or if the body is under the influence of other forces.

Affects of addition and removal of primary and non-primary slopes to particle segments

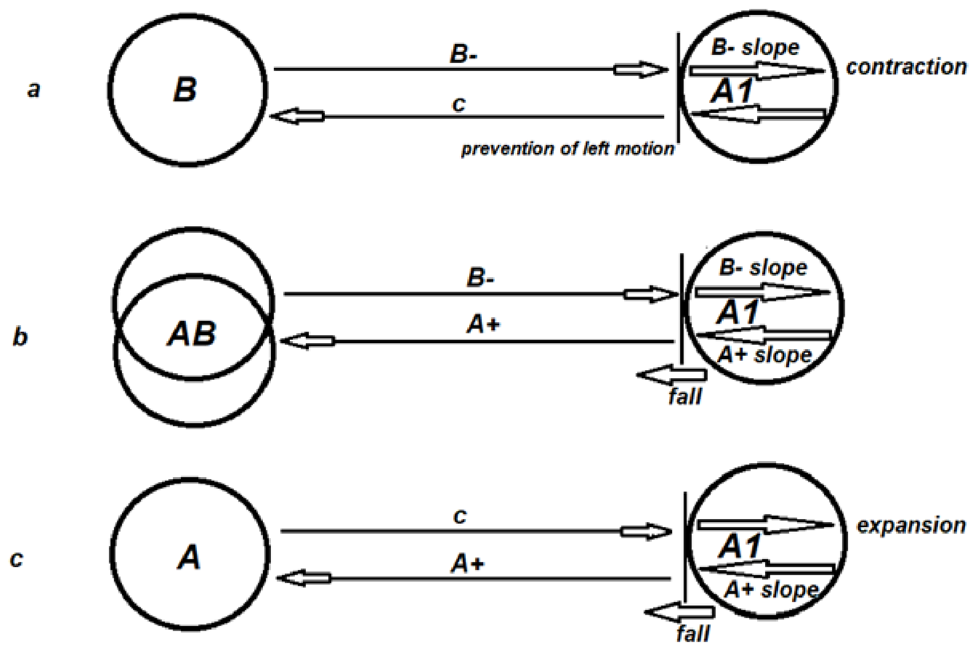
Addition of an ***A+*** slope to a particle segment in ***B*** - No fall and direct expansion of the segment. Removal of an ***A+*** slope from a particle segment in ***B*** - Direct contraction of the segment.

Addition of an ***A+*** slope to a particle segment in ***A*** - Inward fall and expansion of the opposite segment. Removal of an ***A+*** slope from a particle segment in ***A*** - Fall removal and contraction of the opposite segment.

Addition of an ***B-*** slope to a particle segment in ***A*** - No fall and direct contraction. Removal of an ***B-*** slope from a particle segment in ***A*** - Direct expansion

Addition of a ***B-*** slope to a particle segment in ***B*** - Inward fall and contraction of the opposite segment. Removal of a ***B-*** slope from a particle segment in ***B*** - Fall removal and expansion of the opposite segment..

Fig 11 Changing fields with ***A1*** to the right. ***A1*** is prevented from falling.

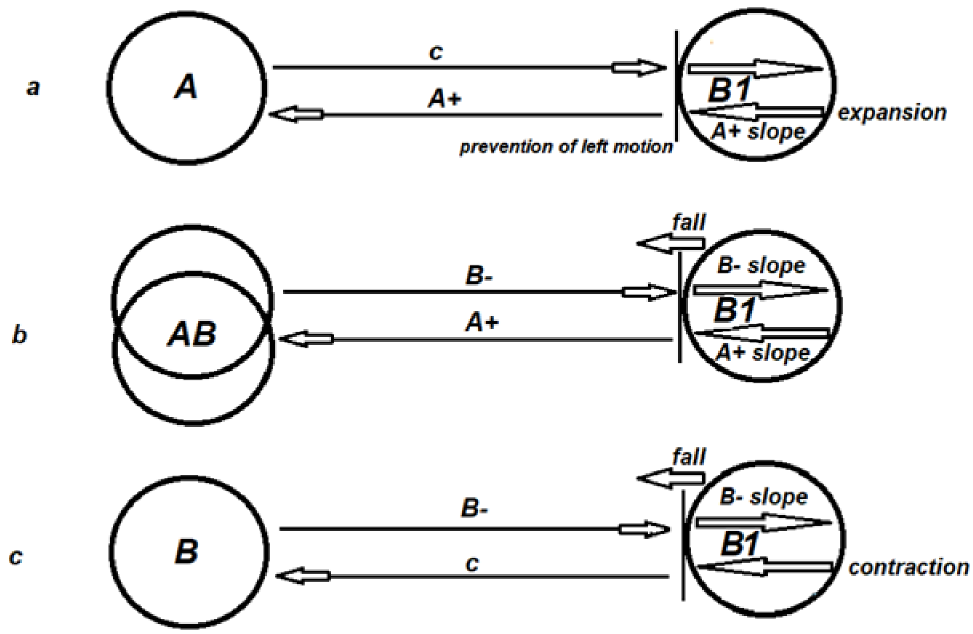


In fig 11a the addition of a ***B*** to the left of ***A1*** in a flat balanced field creates a non-primary ***B-*** slope on ***psr*** of ***A1*** which puts it in contraction. (charge force is left)

In 11b the addition of ***A*** to the left causes fall on ***A1*** which affects particle segment on the opposite side. ***psr*** of ***A1*** is expanded which cancels its contraction and ***A1*** is in a sloped balanced field with no charged forces.

In 11c the removal of a non-primary ***B-*** slope to the left of ***A1*** in a sloped balanced field removes contraction which causes expansion of ***psr*** of ***A1***. (charge force is right)

Fig 12 changing fields with ***B1*** on the right. ***B1*** is prevented from falling.

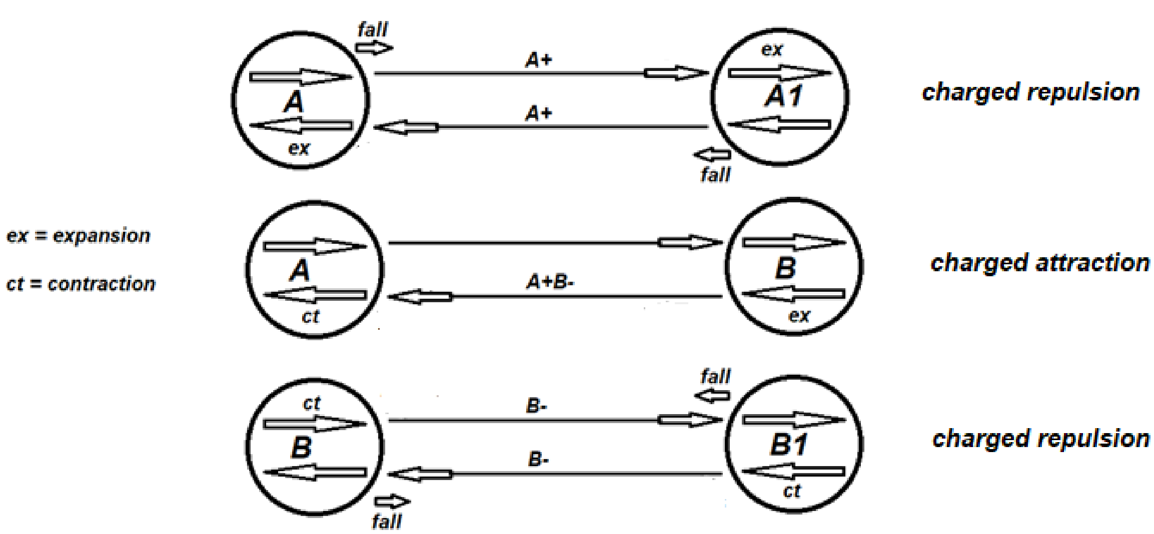


In fig 12a the addition of a non-primary ***A+ slope*** to the left of ***B1*** in a flat balanced field causes expansion of ***psl*** of ***B1***. (charge force is left)

In 12b the addition of ***B*** to the left causes fall on ***B1*** which affects particle segment on the opposite side. ***psl*** of ***B1*** is contracted which cancels its expansion and ***B1*** is in a sloped balanced field with no charged forces.

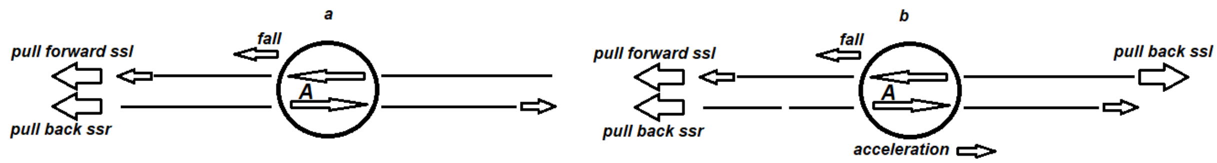
In 12c the removal of a non-primary ***A+*** slope from the left of ***B1*** in a sloped balanced field removes expansion and causes contraction of ***psl*** of ***B1***. (charge force is right)

Fig 13 repel and attract



A field in-between *A* and *B*

Fig 14 pull-forward and pull-back on ***ssl***

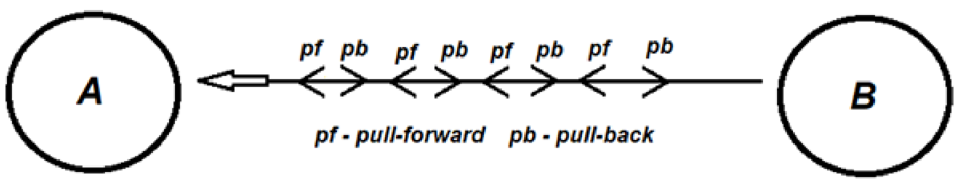


a – Body ***A*** falling in a neutral balanced sloped field is equivalent to it sitting stationary in a flat field that is accelerating left. ***A*** cannot detect fall and feels it is in a flat neutral field.

b – ***A*** detects the additon of a pull-back on its space as it falls and reacts accordingly. ***A***'s ***psl*** is pulled back and contracts while it falls. ***A*** accelerates right.

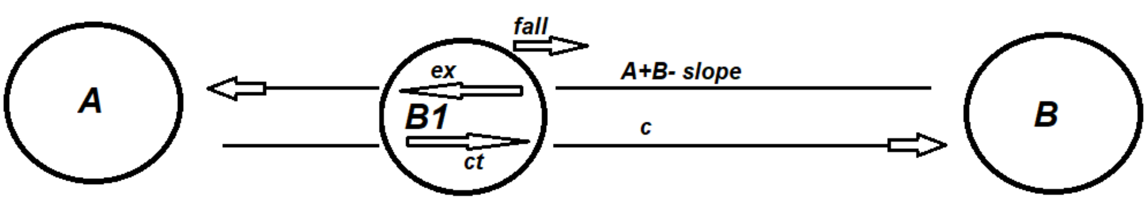
The effects of both the changes on ***ssl*** are still in play. We can say that the two spaces increasing and decreasing on the same directional space (primary and non-primary) are hidden in this new space but still act independently.

Fig 15 Opposing slopes on one directional space



If bodies can detect and distinguish primary and non-primary pulls (pull-forward, pull-back) within a one directional space than their individual effects are maintained.

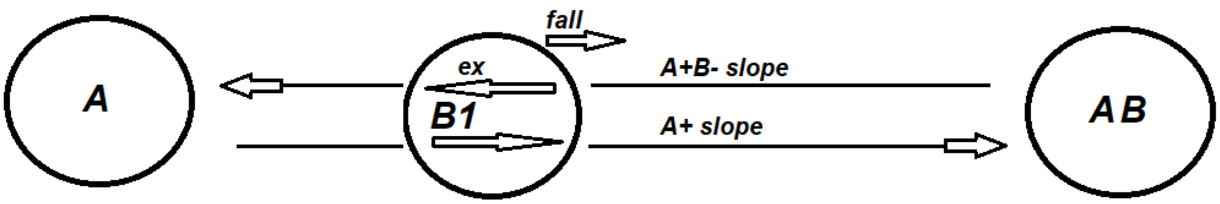
Fig 16 ***B1*** in-between ***A*** and ***B***



psl of ***B1*** detects a non-primary ***A+*** pull-forward and expands. The magnitude of force is determined by ***A***'s ***FR*** fall slope. The pull-back from ***B*** on ***psl*** causes a fall force right on ***B1*** which puts ***psr*** of ***B1*** in contraction. The strength of fall and charged force on ***B1*** is determined by ***B***'s ***FR*** fall slope.

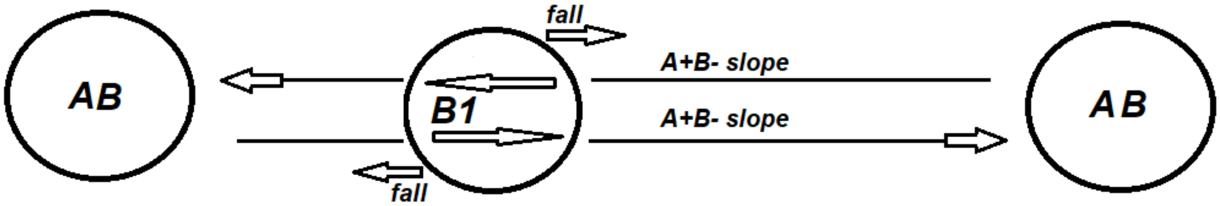
B1 is accelerating left by expansion and contraction.

Fig 17   adding an ***A*** body to the right



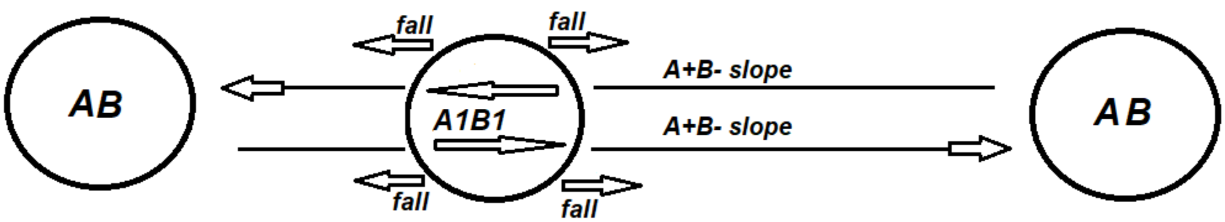
A-right expands ***psr*** of ***B1*** cancelling its contraction and neutralizing the segment. ***Psl*** is still in an expanded state. ***B1*** is under a fall force right and a charged force to the left by expansion.

Fig 18   adding a ***B*** body to the left



B-left causes a fall pull left on ***B1*** causing contraction of ***psl*** and thereby cancelling its expansion and neutralizing the segment. All charged forces are neutralized. Only fall forces remain. ***B1'***s fall rate is determined by ***B*** bodies only.

Fig 19   Adding ***A1*** to ***B1***



A1's fall rate is determined by ***A*** bodies. ***B1***'s fall rate is determined by ***B*** bodies. If mass of each body is 1/2. Then the fall rate on ***A1B1*** is $-g/(d-r)^2+g/r^2$. This is a conventional gravitational field in-between two equal bodies of mass 1.

The directional space travelling in-between ***A-B*** is a stretched directional space.

Summary

A gravitational field is comprised of two types of fields that emanate from two different types of bodies.

A bodies produce an ***A+*** field. ***B*** bodies produce a ***B-*** field.

The fields are sloped. They create fields that pull space inwards creating fall.

Together when they emanate from the same location the field is balanced and no charged forces occur.

Individually they generate charged forces that can be opposite in direction depending on the type of body in their field.

An ***A+*** field from an ***A*** body expands inbound particle segment of any ***B*** body in its field causing an inward charged force.

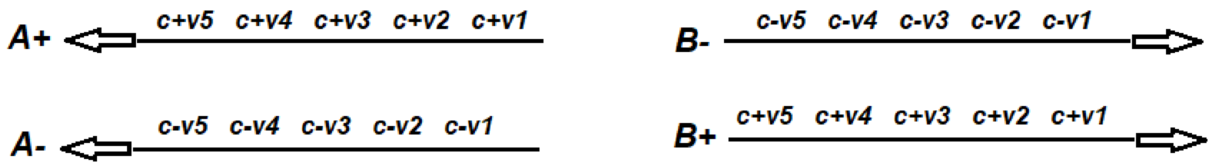
An ***A+*** field from an ***A*** body creates inward fall on any ***A*** body in its field causing expansion of outbound particle segment and an outward charged force.

A ***B-*** field from a ***B*** body contracts outbound particle segment of any ***A*** body in its field and causes an inward charged force.

A ***B-*** field from a ***B*** body creates inward fall on any ***B*** body in its field causing contraction of inbound particle segment and an outward charged force.

Part 4 *A*nti-bodies

Fig 1 anti slopes



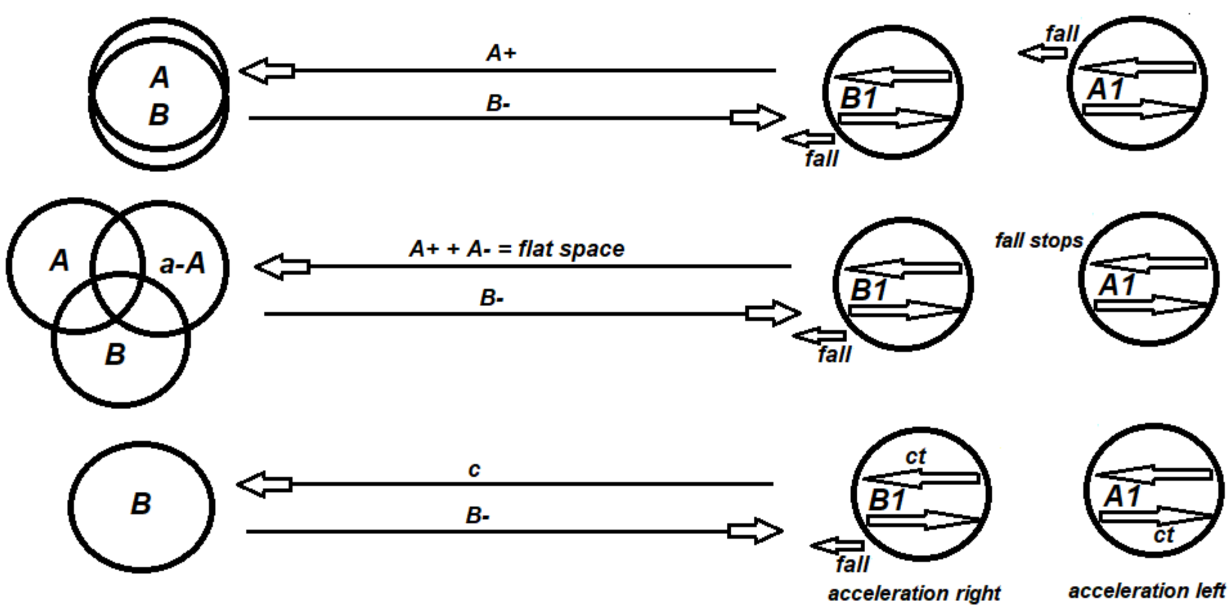
Can we eliminate slopes by adding anti slopes that flatten the field. In fig1 an ***A-*** slope will flatten an ***A+*** slope. A ***B+*** slope will flatten a ***B-*** slope.

If all slopes must be associated with bodies, then slopes that negate slopes are considered to originate from anti-bodies.

Let the source of an ***A-*** slope be a body denoted as ***antiA (a-A)***

Let the source of a ***B+*** slope be a body denoted as ***antiB (a-B)***

Fig 2 Removing ***A*** from the source of a balanced sloped field by adding an ***a-A***. ***B1*** and ***A1*** in the field to the right.

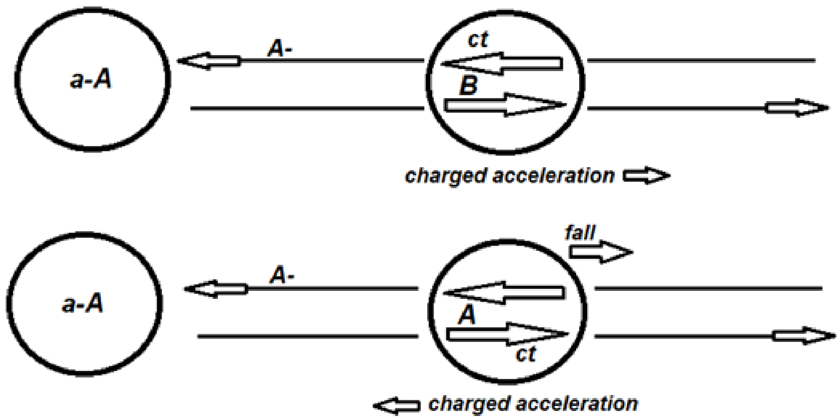


Adding an ***a-A*** body to an ***A*** body annihilates them both and flattens their directional inbound space. ***a-A*** cancels all the effects of ***A***.

a-A- Has no fall effect on ***B1*** and contracts its inbound particle segment.

a-A- Removes ***A***'s left fall and contracts its outbound particle segment.

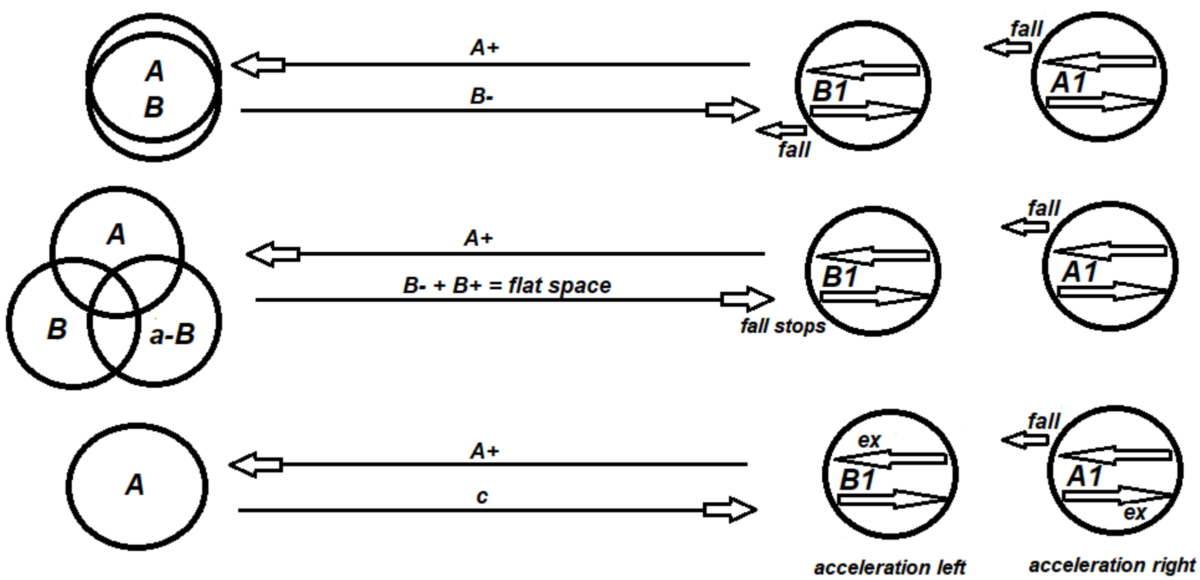
Fig 3   ***A*** and ***B*** in a flat field and the addition of ***a-A*** to the left (it may be the same field as above with us inside the field and falling with it)



In a flat field an ***A-*** slope from ***a-A*** will have no fall effect on ***B*** and will contract inbound particle segment of ***B***. ***B*** accelerates away from ***a-A*** by contraction.

In a flat field an ***A-*** slope from ***a-A*** will cause fall-back (fall-away) on ***A*** and contraction of outbound particle segment of ***A***. ***A*** accelerates inwards toward ***a-A*** by contraction.

Fig 4   Removing ***B*** from the source of a balanced sloped field by adding an ***a-B***. ***B1*** and ***A1*** in the field to the right.

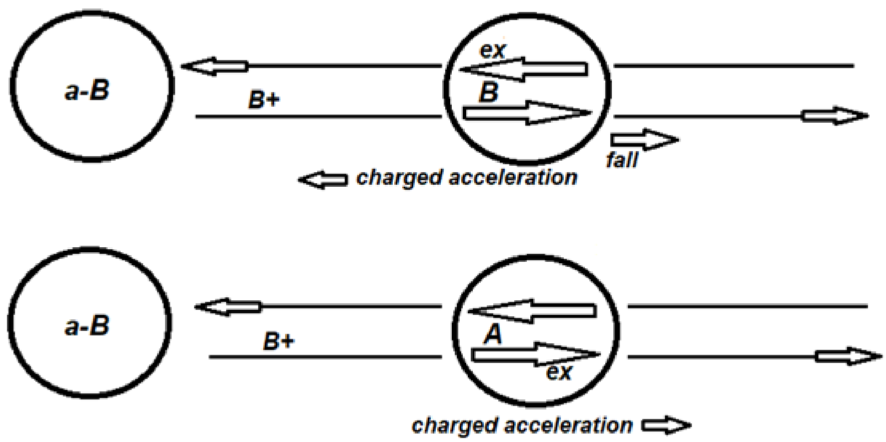


Adding an ***a-B*** body to a ***B*** body annihilates them both and flattens their directional outbound space. ***a-B*** cancels all the effects of ***B***.

a-B- Has no fall effect on ***A1*** and expands its outbound particle segment.

a-B- Removes ***B***'s fall and expands its inbound particle segment.

Fig 5   ***A*** and ***B*** in a flat field and the addition of ***a-B*** to the left

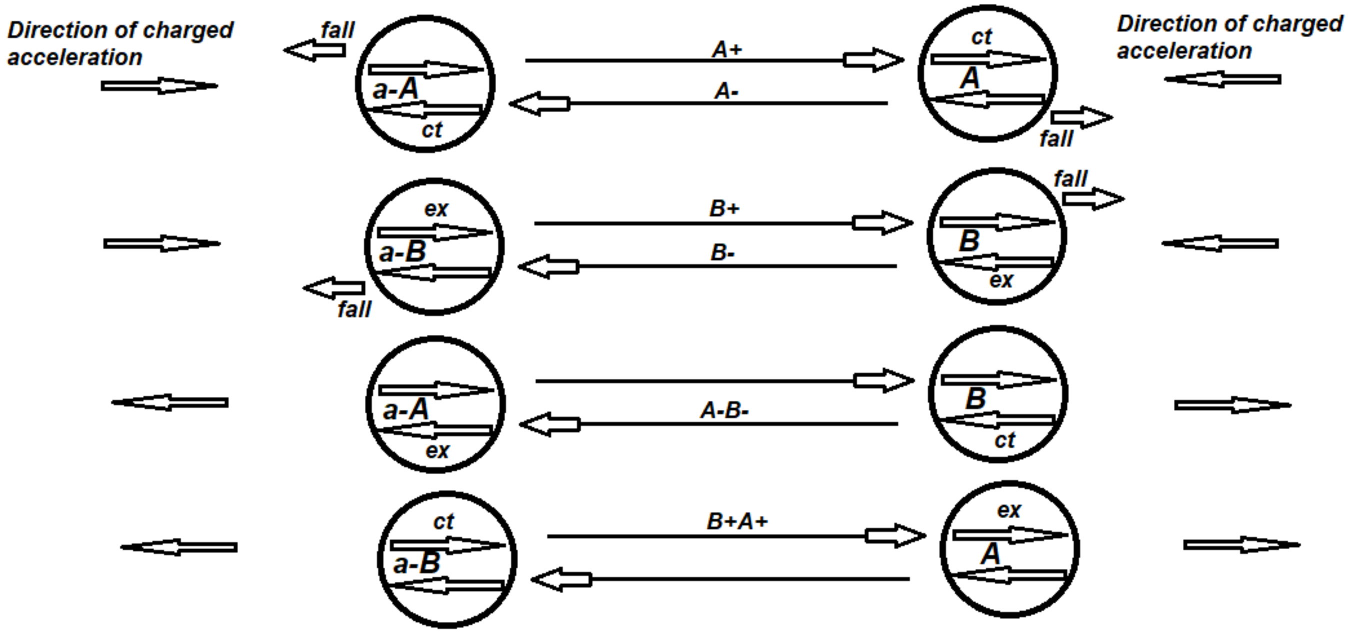


In a flat field a ***B+*** slope from ***a-B*** will cause fall-forward (fall-away) on ***B*** and expansion of inbound particle segment of ***B***. ***B*** accelerates inwards toward ***a-B*** by expansion.

In a flat field a ***B+*** slope from ***a-B*** will have no fall effect on ***A*** and will expand outbound particle segment of ***A***. ***A*** accelerates away from ***a-B*** by expansion.

To maintain the law of equal and opposite reactions, bodies must have the same effects on anti-bodies.

Fig 4 Direction of forces of bodies in fields with anti-bodies

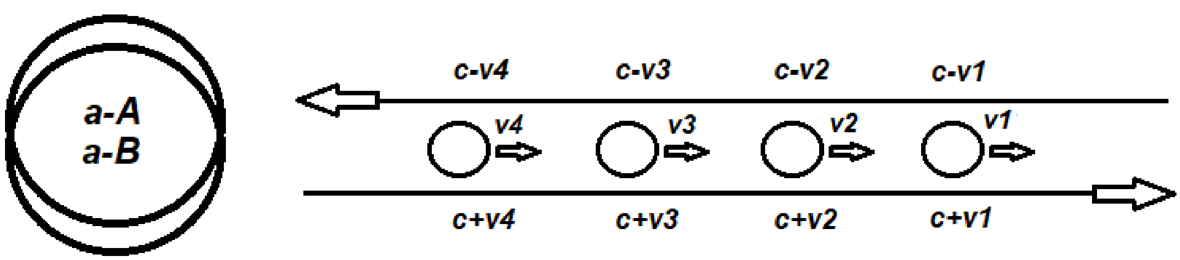


Anti Bodies and negative *FR (-FR)*

Let ***A-*** denote the affected slope from ***a-A.***

Let a ***B+*** denote the affected slope from ***a-B***.

Fig 5 Consider the ***-FR*** field of ***a-AB***



v is the gravitational escape velocity.

-Fr in this field is travelling right but it is decelerating. Fall acceleration is left.

Fall direction of inbound ***A-*** space is inward.

Fall direction of outbound ***B+*** space is also inward.

Antibodies sense pull forces inward and must undergo the same forces in the same fashion with other antibodies as do bodies with bodies.

Relationship of forces to paired bodies

AB AB	fall attraction	no charge forces
A A	fall attraction	charged repulsion
B B	fall attraction	charged repulsion
A B	no fall	charged attraction

anti-AB anti-AB	fall attraction	no charge forces
anti-A anti-A	fall attraction	charged repulsion
anti-B anti-B	fall attraction	charged repulsion
anti-A anti-B	no fall	charged attraction

Forces are reversed when body meets antibody

AB anti-AB	fall repulsion	no charge forces
A anti-A	fall repulsion	charged attraction
B anti-B	fall repulsion	charged attraction
A anti-B	no fall	charged repulsion
B anti-A	no fall	charged repulsion

Fall fields around bodies are pull fields to bodies and push fields to antibodies.

Fall fields around anti-bodies are pull fields to anti-bodies and push fields to bodies

Part 5 Push or Pull Compression or tension Front or Behind

When undergoing mechanical acceleration there are four ways in which a force is received by a particle segment.

Fig 1

1 Push back	compression contraction	detachment of ***psl*** from the front
2 Push forward	compression expansion	detachment of ***psr*** from the back
3 Pull back	tension contraction	detachment of ***psl*** from the back
4 Pull forward	tension expansion	detachment of ***psr*** from the front

A segment whose space is undergoing a primary change stays attached to its space and its endpoints do not change the location of borders.

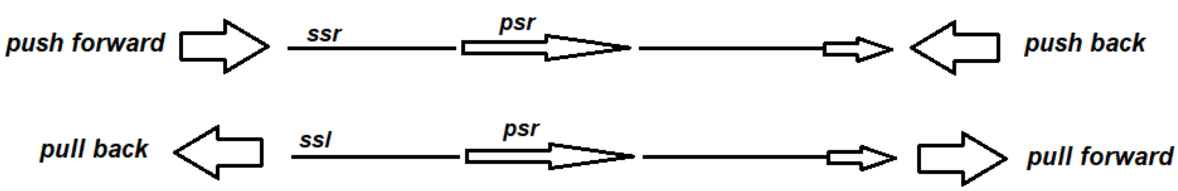
A segment whose space is undergoing a non-primary change is expanded or contracted and changes the location of borders.

The effects on a segment on a directional space undergoing non-primary changes are similar to what segments undergo with mechanical forces. They must undergo compresion or tension stresses.

The effect of a directional space that expands from behind is called push-forward. The effect of a directional space that expands from in front is called pull-forward.

The effect of a directional space that contracts from behind is called pull-back.The effect of a directional space that contracts from in front is called push-back.

Fig 2



A body segments cannot be pulled forward or pushed back relative to their body. They retain attachment and fall if directional space is changed in that manner. Detachment occurs on the non-primary segment from the rear starting point only.

Changes in rear starting points (the entry point of the force) are caused by pull-back or push-forward and define the new speed.

B body segments cannot be pushed forward or pulled back relative to their body. They retain attachment and fall if directional space is changed in that manner. Detachment occurs on the non-primary segment from the front end point only.

Changes in front endpoints (the entry point of the force) are caused by push-back or pull-forward and define the new speed.

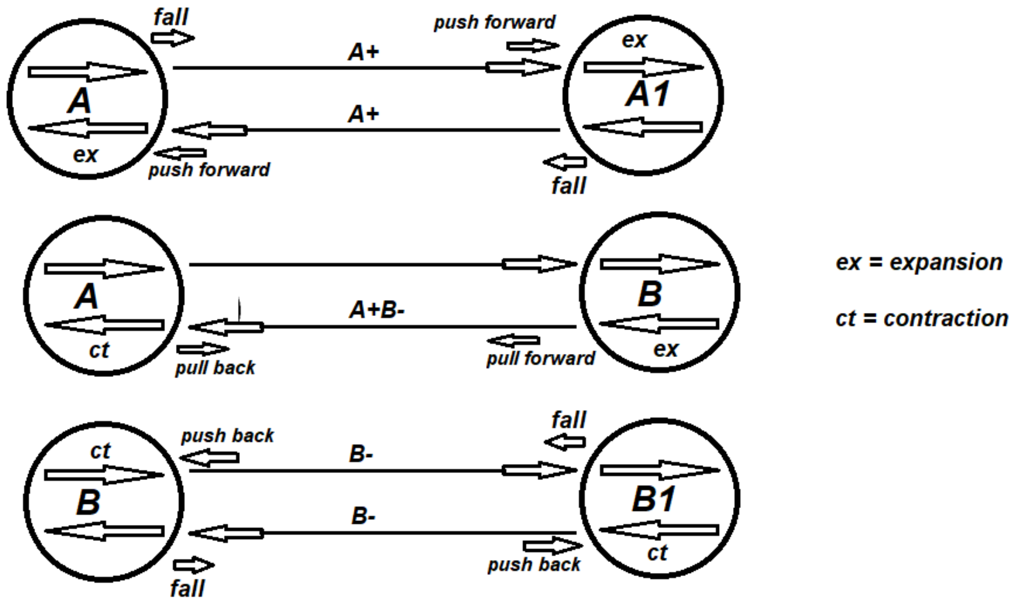
Pull-forward from the front causes tension and expansion. Push-forward from the back causes compresion and expansion. Pull-back from the back causes tension and contraction. Push-back from the front causes compresion and contraction.

Pull-back and push-forward from the rear cancel out. Push-back and pull-forward from the front cancel out.

Compresion and tension forces are relative to the primary segment. If both particle segments are being pulled in a balanced sloped field, the removal of pull (anti effect) on a non-primary segment is a relative push and compression on that segment.

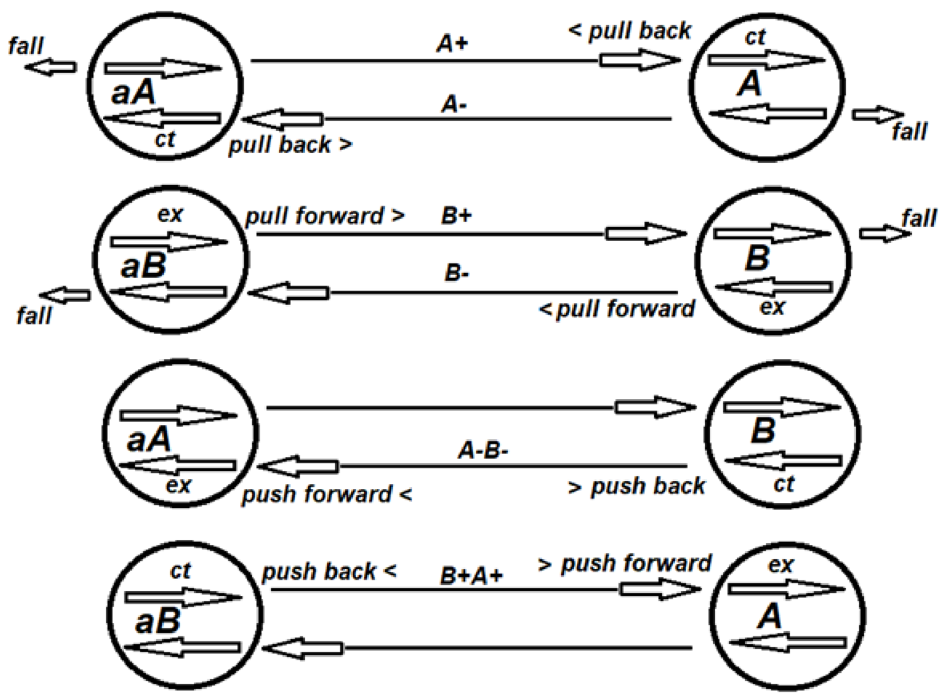
If both particle segments are being pushed in a balanced sloped field, the removal of push (anti effect) on a non-primary segment is a relative pull and tension on that segment.

Fig 3 bodies are pushed out or pulled in



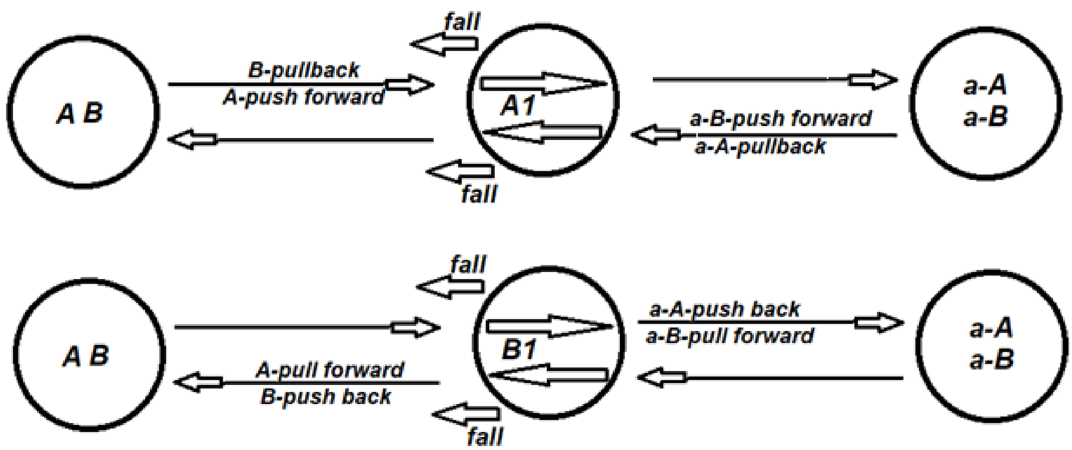
a-A and ***a-B*** bodies undergo the same effects on each other as ***A*** and ***B*** bodies.

Fig 4 Fields between Bodies and Anti-bodies ct-contraction ex-expansion



Falls convert the unaffected directional space on the other side to have relative push effects on opposite particle segments in fig 3 and relative pull effects in fig 4.

Fig 5 ***A1*** and ***B1*** in-between two neutral fields anti to each other.



Both ***A1*** and ***B1*** undergo double fall left. All charged accelerations cancel out.

Summary of charged pull and push forces

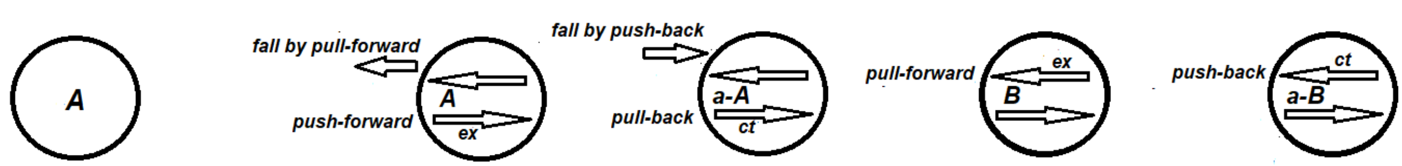
A change – If ***A*** particle segments detect push-back or pull-forward from a directional space they stay attached and fall with the change. If the field is not balanced the opposite segment undergoes charged push or pull forces from behind.

B change – If ***B*** particle segments detect push-forward or pull-back from a directional space they stay attached and fall with the change. If the field is not balanced the opposite segment undergoes charged push and pull forces from the front.

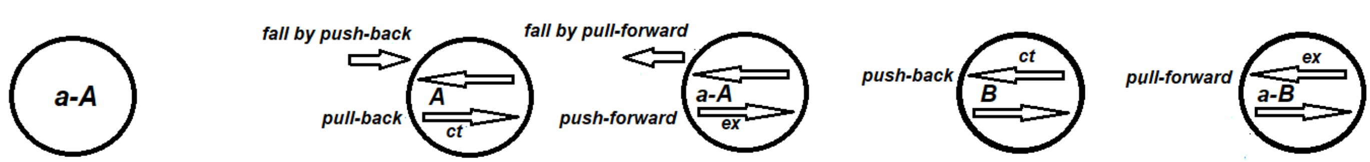
No matter what field the change is introduced to, the effects on bodies are constant

Fig 6 Fall and charged effects of bodies and anti-bodies in unbalanced fields

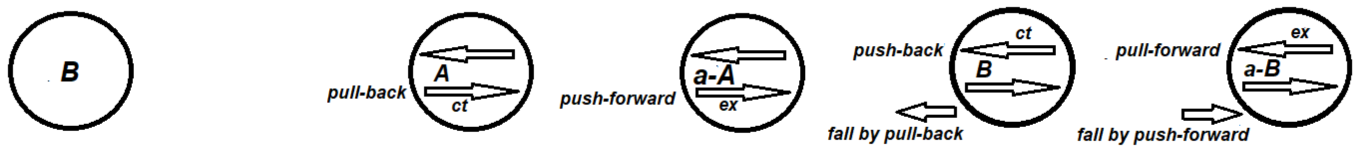
A field



Anti-A field



B field



Anti-B field