

GALACTIC REPULSION

(According to “Hypothesis on MATTER”)

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Abstract: Discovery of gravitation necessitated a search for a cause for the distribution of matter bodies throughout the universe. So far, none of various concepts proposed to overcome gravitational attraction between matter bodies on a large scale, has not supplied a rational theory. ‘Hypothesis on MATTER’ proposes a logical explanation that describes how neighbouring galaxies overcome gravitational attraction between them, to settle at a stable distance from each other. Outer periphery (halo) of a spinning galaxy is occupied by independent primary particles. Their primary electric fields orient themselves to create sufficient magnetic repulsion between galaxies, to neutralize gravitational attraction between them. This is a natural process originating from the universal medium, which encompasses entire universe. Other macro bodies, smaller or different in structure, do not have this protection from apparent gravitational attraction.

Keywords: Gravitational attraction, galaxy, halo, primary electric field, biton, galactic repulsion, cosmology, Hypothesis on MATTER

Introduction:

‘Hypothesis on MATTER’ describes an alternative concept. In it: Whole matter in the universe is the form of quanta of matter. Matter content of a body and the energy about it are distinctly separate. Magnitude of matter content is the total sum of three-dimensional matter in a body. Energy is the strain developed due to ‘distortions’ in the natural arrangements of quanta of matter in and about a body. Matter content and energy content of a body cause and support each other for their existence and stability. They are not convertible into each other.

Entire space is filled with ‘2D energy fields’, two-dimensional latticework formations by basic 1D quanta of matter. 2D energy fields provide an all-encompassing medium. 2D energy fields, in various directions and planes, passing through a point, co-exist. Although, 2D energy fields are made of (apparently) rigid quanta of matter, it has all properties of an ideal fluid. Parts of 2D energy fields, within the macro-body-dimensions, contain sufficient distortions to sustain its integrity and stability in its current

state. This part of 2D energy fields is the ‘matter field’ of the body. Distortions in the matter field are the ‘work-done’ existing in the body and it determines the state of (motion of) the body. Force is the rate of work being stored in/removed from a macro body with respect to rate of its displacement. Action of an effort is simple structural reshaping of the matter field and the resulting motion of any matter particles present in the region. State of (motion of) a body depends on the work (energy stored) in it rather than on the effort applied on it.

All apparent interactions between matter bodies take place through the medium of 2D energy fields. This avoids the assumption of ‘actions at a distance’. There are no ‘pull forces’ or ‘rigid bodies’ in this concept. All forces, classified into various types, are different manifestations of ‘only one type of force’ and it is of ‘push nature’. A free body is that macro body, which is free from all influences other than the forces/actions considered.

Tendency of a 2D energy field to attain serenity does not allow static distortions in it. Transfer of distortions in the matter field of a macro body carries the associated matter particles and thus produces a macro body’s motion. This inertial action, about a macro body, maintains its state (of motion). A change in the inertial actions about a macro body produces its acceleration. If certain work is invested into or removed from a body’s matter field, the body will attain a stable state only after inertial delay, during which the work within the body’s matter field stabilizes. This is true even after the action of effort is terminated. Matter is inert; it has no ability to move or act on its own. Associated matter field-distortions of a macro body produce all apparent actions, presently assigned to the matter (bodies).

Presence of 3D matter particles in a 2D energy field breaks its continuity. Discontinuity causes imbalance in the 2D energy field. Pressures applied by the 2D energy field latticework from the sides, in an attempt to restore its continuity, compress a matter particle. [Basic 3D matter particles – the photons - are of uniform radial size and they constitute all other superior matter bodies]. If the extents of 2D energy field on opposite sides of a matter particle are unequal, the matter particle experiences a resultant effort, which tends to move the particle towards the side of lower effort (pressure or force). Extent of 2D energy fields between two matter particles is always less than the extent of 2D energy fields on their outer sides. As a result, matter particles are pushed towards each other. Motions of constituent particles move the whole body. This action gives rise to the apparent gravitational attraction between bodies. Apparent gravitational attraction between two bodies is, relatively, a minor by-product of gravitational actions on them. It takes place between (spinning and disc shaped) basic 3D matter particles of both the macro bodies, which are in the same plane at the given instant. Apparent gravitational attraction, at any instant, is produced between extremely small numbers of basic 3D matter particles in two macro bodies. An average apparent attraction is derived from sporadic actions between various matter particles, which happen to be in the same plane at any instant. Contrary to present belief, gravitational action is enormously stronger compared to other manifestations of efforts (forces).

2D energy fields store work-done in the form of distortions in its latticework structure. Such regions are called distortion fields. When two distortion fields overlap, distortion-density is no more homogeneous. Inherent property of 2D energy fields, to maintain their homogeneity, cause translational motion on the 2D energy field latticework squares in the region. Movements of distortions carry any matter particle, which happened in the region, along with it. Thus, converting the generated field force, in to inertial actions of matter bodies. Distortion fields are classified into linear (magnetic), angular (electric) and radial (nuclear) distortion fields. Electric field, with low curvature of its lines of force, acts as a magnetic field.

2D energy fields, by their gravitational actions on a group of free quanta of matter within a gap in them, create core bodies of basic 3D matter particles. These core bodies, together with associated electromagnetic waves are light corpuscles – the photons. Under suitable conditions, two complimentary photons form a binary unit of a biton. Bitons are self-sustaining primary particles. Under suitable conditions bitons group themselves in various structures to develop fundamental particles found in nature. By virtue of its structure, a biton has an angular distortion field around the common path of its constituent photons. This is a primary electric field. While moving in linear path at considerable speed, bitons orient themselves so that the planes their primary electric fields are perpendicular to their line of motion.

Direction of inertial motion produced by apparent interaction between electric fields not only depends on the directions of electric field, but also on the distance between them. At ‘zilch force distance’ between two electric fields, there will be no apparent interaction between them. Direction of inertial action on either

side of zilch force distance, reverse. An electric field with low curvature of its lines of forces behave as magnetic field. An electric field, whose lines of force are of high curvature, while moving in a magnetic field gradient orients itself so that its interactions with the magnetic field become apparently attractive (towards the region with higher magnetic field-density).

All conclusions expressed in this article are taken from the “*Hypothesis on MATTER*” [1]. For details, kindly refer to the same.

Galactic repulsion:

Whether it is due to mutual attraction or due to changes in fields about a body (changes in space-time continuum), it is a fact of observation that all matter bodies in nature have a tendency to approach each other. Discovery of this fact raised further logical questions. It is observed that matter bodies are present everywhere in space. If they have a tendency to approach each other, at some stage of universe, all matter bodies in nature should form a single matter body and presence of matter will be concentrated at a point. This is not logical and contrary to observation.

Thus, it has become necessary to discover a logical mechanism that keeps total matter content of the universe widely spread throughout the universe. In the past, many theories were devised to justify widely spread presence of matter bodies, irrespective of apparent gravitational attraction between them. Unfortunately, none of them gained wide acceptance as a logical theory.

In this concept, it is maintained that certain distortions in universal medium cause apparent gravitational attraction between matter bodies. If these distortions can be modified by natural phenomena, apparent gravitational attraction between matter bodies can be counteracted to keep matter bodies of certain sizes, away from each other. At the same time, such neutralization of apparent gravitational attraction should not be effective between bodies of smaller sizes. It is the nature and magnitude distortions in the universal medium (2D energy fields), which dictates the nature of apparent interactions between matter bodies.

Speed of light is the ultimate linear speed of matter bodies in nature. As linear speed of a macro body approaches linear speed of light, it breaks down into its constituent fundamental particles and primary particles. At the linear speed of light, only matter particles that can survive are the photons. Beyond this speed, no matter body can be moved because that is the ultimate speed the 2D energy fields can provide. Any attempt to increase linear speed of photon increases its matter content (frequency) rather than its linear speed.

Biton is a self-sustaining primary particle made up of a binary union of two identical photons. Constituent photons of a biton maintain their linear motion at critical linear speed in a common curved path about a common centre. Simultaneously constituent photons of biton spin in phase about a common axis passing through biton’s centre. Bitons are unable to move at any appreciable linear speed in planes of their existence. At higher linear speeds, 2D energy fields reorient all bitons to move in linear path perpendicular to their planes of revolution.

Due to angular nature of associated distortion field of a primary particle (biton), each biton has a primary electric field. An electric field is an angular distortion field in the 2D energy fields. Face of an electric field, where representative lines of force appear in clockwise direction is positive electric charge. Face of an electric field, where representative lines of force appear in anti-clockwise direction is negative electric charge. Every electric field has both positive and negative electric charges.

Combination of electric fields, in proper array, creates magnetic fields. Magnetic fields are distortion fields in 2D energy fields, where lines of force of distortions are of linear nature. An electric field, curvature of whose lines of force is small, acts as a magnetic field.

A free electric field-producing element, moving in a magnetic field with a gradient (gradually varying in strength), tends to reorient itself such that it is in attractive (interactive) phase towards higher-density region of magnetic field.

A very large inter-galactic cloud, during its condensation period, may be fragmented into many smaller clouds by uneven distribution of its matter content and by spinning motion of the cloud, as is envisaged by ‘Nebular hypothesis’. These smaller clouds further condense into separate bodies but

simultaneously being constituents of the same group. In this case, the total matter content of the combined body is distributed over a wider region and hence there is no concentration of its matter content in a place. Photons, escaping from the region of the cloud are not slowed down very much and hence these types of groups of bodies, called ‘galaxies’, are visible to outside observers within the universe.

A very large (single) macro body of matter content, comparable to a galaxy, is a ‘black hole’. Main difference between black hole and a galaxy is in the distribution of their matter contents. In a black hole, whole of its matter content is concentrated in a single body but the total matter content of a galaxy is distributed over a wide region in space in the form of small bodies and dust clouds. Galaxies spin as a single body, over and above the spinning and revolving motions of local bodies within the group. Each part of the galaxy and the galaxy as a whole body develop their spin motion independently. A galaxy develops its spin motion due to its gravitational collapse and uneven distribution of its matter content. Spin motions of other bodies are developed by their gravitational collapse as well as by apparent interactions between them. A galaxy may contain millions of stars, planet-sized bodies and smaller bodies. It also has assorted very small sized bodies along with dust clouds.

Due to the very large size of a galaxy and its high spin speed, linear speed of any matter particle towards its edge is extremely high and is comparable to the speed of light (photons). No 3D matter particles larger than the photons and the bitons (with their planes perpendicular to the direction of motion) can survive at this speed. Therefore, all matter particles in the region along the periphery of a galaxy find themselves disintegrated into their constituent bitons. These bitons orient themselves to minimize resistance to their motion, from the 2D energy fields, by having their planes perpendicular to their line of motion. This is purely a mechanical action so that the moving bitons experience minimum resistance from the 2D energy fields. Outer edge of a galaxy is filled with independent bitons, moving in this state. Peripheral region of a galaxy, occupied by free bitons, is the ‘halo’ of a galaxy. Apparent attraction due to gravitation between bitons in halo and matter content of the galaxy is balanced by the apparent centrifugal force on the bitons due to their linear motion in curved paths around the galaxy.

Each biton has a primary electric field. Orientation of a biton along the periphery of the galaxy is a mechanical activity. Therefore, these bitons are randomly oriented in the beginning. They could be oriented in either of the two ways. Their electric charges could be in phase or out of phase with a reference. Primary electric fields of equal numbers of bitons, which are out of phase with each other, neutralize. There will be some surviving primary electric fields, which produce a resultant electric field in any one direction.

Primary electric fields act within zilch force distance with other distortion fields, in their immediate neighborhood. These primary electric fields, together, make a resultant electric field in the shape of a torroid along the outer edge of the galaxy. Resultant electric field being large (of low curvature), acts outside its zilch force distance and hence behave like magnetic field. Hence, there is a strong magnetic field around the edge of a (spinning) galaxy, perpendicular to its plane of spin. Lines of forces of magnetic fields at two places on the periphery of a galaxy are shown in figure 1. They are in opposite directions. Directions of these magnetic fields, appearing on the periphery of the galactic disc, are with respect to an external reference. Each biton, contributing to this magnetic field, is also capable to interact on its own with any other external distortion fields.

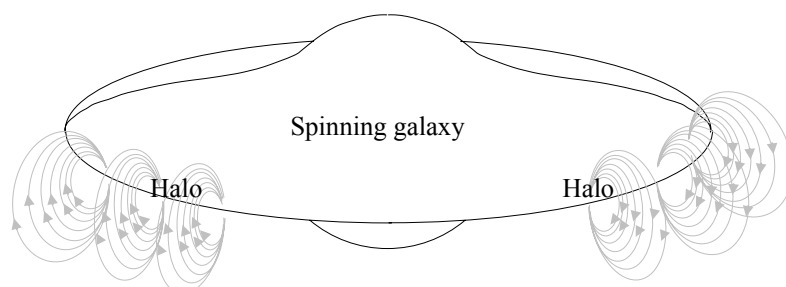


Figure 1

Galaxies in space are also under gravitational influence. They apparently attract each other due to gravitation. Galaxies tend to move towards each other under apparent gravitational attraction. If they are near enough, magnetic fields about their periphery interact with each other. There are two possibilities.

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Their magnetic fields can be in repulsive phase or in attractive phase with each other. Both of the galaxies, moving towards each other under the apparent attraction due to gravitation, have strong magnetic fields about their periphery, perpendicular to their plane of spin.

As their magnetic fields starts to interact, each of the primary electric fields of free bitons, present about the rim of galactic periphery, is also interacting with the magnetic field of the other galaxy in its own capacity. They are able to act on their own because each biton is an independent body and is not bound to any other particle, mechanically or otherwise. Because of the great distance between the galaxies, there is a gradient in their magnetic field strength along the line joining their centers. Magnetic field gradient of one galaxy affects the primary electric fields of bitons of the other galaxy. Each of the primary electric field tends to re-orient itself so that it is in attractive phase towards the higher-density region of the magnetic field of the other galaxy. Many of the bitons succeed to re-orient themselves in this way.

Ability of a biton to re-orient itself depends on the relative strength of re-orienting effort with respect to the aligning effort due to its linear speed. Re-orientation of a biton does not always mean that the biton is turned through 180 degrees, but it is turned by angle enough to make a change in the sense of its primary electric field with respect to external distortion fields. Figure 1 shows magnetic fields produced at two different places in the halo of a galaxy, facing two external galaxies. They are of different polarities.

Two parallel and unidirectional distortion (like-magnetic) fields repel each other. Let the magnetic lines of forces of the two approaching galaxies are of the same polarity. Lines of forces are parallel and unidirectional. Hence, the approaching galaxies apparently repel each other. If their repulsion is strong enough, the galaxies come to stay away from each other, at a place where the apparent attraction due to gravitation and the apparent repulsion due to their magnetic fields balance each other. Since the galaxies are spinning bodies, this balancing is a dynamic action. As the galaxies turn, nearest points on their peripheries facing each other, change. Magnetic field strength at these points also may be different. Therefore, variation in the strength of galaxies' magnetic fields has to be continuously updated to maintain the required balance.

If their apparent repulsion is not strong enough, due to low magnitude of their magnetic fields, approaching galaxies may continue to move towards each other. Now, the free bitons moving along the periphery of one galaxy are carried into the magnetic field of the other galaxy. Magnetic fields of the galaxies have higher density in a direction towards galactic centers. Therefore, these bitons (disregarding their movements along the periphery of the galaxy) are moving towards a region of higher-density magnetic field. Bitons, moving towards higher-density magnetic region, tend to re-orient themselves, such that their primary electric field is in attractive phase with the higher-density magnetic region. Bitons in both the galaxies tend to re-orient and many of them will succeed. If the approaching speed of the galaxies are faster, more bitons are re-oriented and at a higher rate. Re-orientations of these bitons strengthen magnetic fields of both the galaxies to increase their magnetic field strength and their mutual apparent repulsion.

Two parallel distortion fields (magnetic fields) in opposite directions attract each other. Let the magnetic lines of forces of the two approaching galaxies are of opposite polarity. In this case, lines of forces are parallel but in opposite directions. Hence, the galaxies apparently attract each other due to their magnetic fields. This apparent attraction is assisting the apparent attraction already existing between them due to gravitation. The galaxies are bound to move in a collision course at an accelerating pace.

Since the magnetic fields of approaching galaxies (let them be galaxy 'A' and galaxy 'B') are in opposite directions, they tend to neutralize each other. Only the resultant of the two is left over. Therefore, for the time being, we will consider that galaxy 'A' has greater magnetic field compared to galaxy 'B'. Resultant magnetic field of their combination belongs to the galaxy 'A', whose magnetic field is of greater strength. As the galaxies move towards each other, free bitons on the rim of galaxy 'B' are carried into the magnetic field of galaxy 'A', in a direction towards high-density region of the magnetic field. These bitons tend to re-orient so that they are in attractive phase with the region of higher-density magnetic region. Many bitons succeed to re-orient themselves. This reduces magnetic field of galaxy 'B', which was in opposite direction to the magnetic field of galaxy 'A'. Process of re-orientation of the bitons will continue and gradually the galaxy 'B' will develop a magnetic field, which is in the same direction as that of galaxy 'A'. Now, magnetic fields of both galaxies are in repulsive phase. Strength of the apparent repulsion between the galaxies will be adjusted in due course of time as described earlier.

By the re-orientation of the bitons, in this way, the resultant electric field/magnetic field of parts of both galactic peripheries, facing each other, have now become in repulsive phase with each other. Thus, the galaxies are prevented from coming in to colliding distance, irrespective of their relative direction of spin. Factors controlling this phenomenon are the direction of the magnetic field of one galaxy and the direction of orientation of the free bitons in the other galaxy. Because of this action, it is possible for a galaxy to have different directions of its magnetic fields at different places around its periphery, facing other galaxies.

Only factor, producing this kind of apparent repulsion between the galaxies, is the ability of free bitons to re-orient themselves, irrespective of their direction of motion. Hence, any two bodies with similar high-spin-speed and with free bitons at their periphery can develop magnetic fields to produce apparent repulsion between them. Therefore, directions of planes of the galaxies or their shapes do not affect this phenomenon. Any two galaxies (even if their direction of approach is along their spin axes) are prevented from approaching each other within collision distances. They may collide only in accidental situations, which are most improbable.

If sufficient time is not available to create enough apparent repulsion between the galaxies, they will collide into each other. Magnetic interactions between spinning galaxies keep them at a definite distance from each other. Distance between two galaxies, in stable state, depends only on their matter contents. That is, distance between two galaxies is proportional to the force of apparent attraction between them, due to gravitation. Their magnetic field strengths are automatically corrected to keep this distance.

Macro bodies, smaller than a galaxy, do not have this protection. Here, it is the size of the macro body, what counts and not its matter content. Many of the smaller macro bodies are spinning and have magnetic fields of their own but they do not apparently interact in this way for two reasons. First, their peripheral speed is too slow to have free bitons around their periphery. Secondly, magnetic field-producing elements are not free, as to reorient themselves under the influence of an external magnetic field. As a result, these macro bodies approach each other under the action of apparent gravitational attraction between them to collide into each other or to be captured-in, to form union of multi-body system.

This phenomenon gives galaxies their ability to exist independently and static in space (relative to other galaxies). Hence, wherever in space we look, we may find galaxies there. Stable galaxies constitute matter-world to us. This matter-world, on a large scale is in steady state and perpetual. However, macro bodies are not perpetual. Locally in any part of a galaxy or the galaxies themselves are destroyed and rebuilt in cyclic manner.

3D matter is created from 2D energy fields at cyclically varying rate. At the same time, 3D matter is reverted into 2D energy field at similar cyclically varying rate. Development of 3D matter and formations of 3D composite bodies in nature increases its entropy. Reversion of 3D matter into 2D energy fields, which is a highly ordered stable system, reduces entropy of nature. Cyclic conversion/reversion of matter into its 3D state and its 1D status in the universal medium keeps entropy of universe within limits.

Conclusion:

Spinning galaxies have a natural protection from approaching each other and colliding under the action of apparent gravitational attraction. Similar protection is not available to black holes, even if they are of comparable matter content. This mechanism automatically regulates the apparent repulsion to overcome apparent gravitational between galaxies irrespective of their spin speeds or total matter contents. Sustaining relative positions of galaxies in space (at constant distance from each other) helps to maintain steady state of a perpetual universe. This is irrespective of occasional local disintegration of matter bodies, necessary to maintain universe's entropy within limits.

References:

- [1] Nainan K. Varghese, *Hypothesis on MATTER* (second edition), (2003), <http://www.booksurge.com/Hypothesis-on-MATTER-Second-Edition/A/1419689789.htm>
- [2] Nainan. K. Varghese, ARTICLES, <http://wbabin.net/papers.htm#Varghese>

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