

UNIVERSAL MEDIUM

(According to “Hypothesis on MATTER”)

Nainan K. Varghese, matterdoc@gmail.com

Abstract: Action at a distance is an illogical assumption. An all-encompassing medium is essential to facilitate physical actions. Aether, used in aether-theories is too vague and it fails to describe many physical actions of matter bodies, logically. ‘Hypothesis on MATTER’ envisages an all-encompassing medium, which has real (postulated) constituent particles and definite properties. In order to distinguish it from the aether, used in aether-theories, it is called ‘2D energy fields’. This article gives a very brief description of 2D energy fields’ constituents, structure, properties and actions. Envisaging the 2D energy fields, as described in the concept, helps to explain all physical phenomena, related to matter, logically. For details, kindly refer to ‘Hypothesis on MATTER’ [1].

Keywords: Aether, Universal medium, Quantum of matter, Matter, 2D energy field, Matter field, Distortion field, Disturbance, Force, Hypothesis on MATTER.

Introduction:

“Action at a distance” is the worst assumption in physics. Rational thoughts suggest an all-encompassing medium, which fills the entire space, including inter-particle spaces within macro bodies. So far, all proposals, suggesting such a medium failed to stand scrutiny. All past proposals, suggested in various aether theories, assumed that the medium fills the entire space and all matter bodies are immersed in it. All actions were attributed to matter bodies, whose actions would affect other matter bodies through the medium. These assumptions required that the medium should have certain properties. These properties, when taken together often contradicted themselves. Although, forces could be transmitted through the medium, matter bodies were assumed to move in relation to the medium. Relative motion (between the medium and matter bodies) raised the question of friction between the medium and the moving matter bodies. This culminated in the assumption that a moving matter body, in the medium, experiences certain friction (or drag) to its motion. Many scientists attempted to determine such drag, until the experiment to determine aether-drag on earth’s motion in space failed to show any results. Failure to determine aether-drag temporarily put an end to further search for the all-encompassing medium and we have returned to the illogical assumption of ‘action at a distance’.

However, in many of our theories, we still use a vague form of universal medium – various types of fields. These fields have no particular structure or properties. Each type of field is associated with a particular phenomenon. They are mainly used in analytical explanations to indicate the region of influence of a phenomenon, in space. Lines of forces in these fields facilitate better analytical understanding of a phenomenon.

This article attempts to summarise a revolutionary proposal from the book “Hypothesis on MATTER”. Universal medium, suggested in this concept, has definite structure and properties. It is made up of matter and fills the entire space outside 3D matter particles. It has the same matter density as the matter density of basic 3D matter particle, yet it behaves like a perfect liquid to the relative motions of 3D matter bodies. It causes no friction to moving 3D matter bodies but acts as an all-encompassing medium for all apparent interactions between 3D matter bodies. Above all, it is this universal medium that creates and sustains 3D matter particles out of disturbances in it. It cannot interfere with any apparent actions of 3D matter bodies because this medium itself produces all such actions rather than the matter bodies. This universal medium inherently seeks serenity in nature. All statements, made in this article, are logically explained in the book.

Space:

Space is treated differently in different aspects. In physics; the space is understood as the boundless three-dimensional extent of universe, where all material objects including the organisms (including rational beings like ourselves) exist and in which objects and events occur. All material objects in the universe have their relative position and motion in the space. Space, itself, has no material existence. It is a functional entity that serves the purpose of locating various material bodies in it and where rational beings relate them with each other. The extent, outside material bodies, becomes the space.

Perception is a process by which living organisms become aware of relative positions of objects around them (and of their own bodies). For perception, living organisms use data received by their senses to conjure their own version of surroundings. This helps their orientation and activities with respect to the surroundings. It aids individuals to understand their location in relation to any other objects with respect to depth, distance, etc., which are important for accounting for their various motions. In order to be perceived, an object has to real, i.e. it should have positive (real) existence. With respect to three-dimensional rational beings, only 3D matter bodies can have positive existence. Since the space has no material existence, it is a functional entity that is visualized by the rational beings for a purpose, assigned to it by them. Space has no real form or structure. A body that has no form or structure cannot deform or distort. Curvature, expansion or contraction of (structure-less) space, etc. used in some physical theories, are pure imagination which may aid mathematical exercises to prove illogical and mysterious physical laws.

All spatial concepts are related to contact-experiences of solid bodies (which may be felt by rational living beings). This has made it necessary to envisage an entity independent of these (solid) bodies and yet embodying their locations. This entity outside material bodies, yet enclosing them came to be understood as space. When a rational mind envisages a real object, it logically pre-supposes a place for its existence. This is understood not by sensing such a place but by the necessity of a place for the existence for any real body to exist. This does not happen in case of functional entities, like, emotions. In this sense, the space appears to have a physical reality, which is solely depend on the existence of (real) matter objects in it. As a result, the notion of space is somewhat incoherent, because it professes to be a container that is logically prior to its contents. Space turns out, in practice, to be merely an indefinitely extensible collection of its contents – the 3D matter bodies. Everything that occupies space falls within this wider spatial context. Space denotes a property by virtue of which different bodies occupy different positions in the universe. The possibility of arranging an unlimited number of matter bodies next to one another denotes that the space is infinite in its extent.

There is no logical argument for theories, based on these types of concepts. That is why, from early time, it was believed that an entity, named aether, filled the entire space. In these theories, the aether replaced the space by filling it entirely. Therefore, all properties assigned to space could be the properties of aether. Aether had an ambiguous form but it was regarded as a real entity. Since the aether was real, it could deform, move or otherwise interact with other material objects. Unfortunately, no one could describe a satisfactory structure or properties for the aether. The aether was assumed to be weightless, transparent, frictionless, undetectable chemically or physically, and literally permeating all matter and space. Aether

theory met with increasing difficulties as the nature of light and the structure of matter became better defined, even if it was on imaginary basis. Since there is no accepted definition of aether, scientists concentrated their effort to find an effect the aether may make on other 3D macro bodies. For this they assumed, when a large macro body moves through the aether, the macro body should essentially experience a drag due to the friction between the two. Aether theory was seriously weakened (1881) by the Michelson-Morley experiment, which was designed specifically to detect resistance to the motion of the Earth through the ether. Experiments showed that there was no such tangible effect. Finally, when aether's existence could not be proved experimentally, by experiments based on illogical theories, majority of scientists abandoned the concept of aether. They have turned to more mysterious concepts of space.

Everyday experience of natural phenomena shows mechanical things are moved by contact between force-applying body and force-receiving body. Thus, we came to conclude that for any action to take place between two real bodies there must be a contact between them. Nature of this contact is expressed as action of force between the bodies. Any cause and effect without a discernable contact between participating bodies, or "action at a distance," contradicts common sense and has been an unacceptable notion since earliest of time. Whenever the nature of the transmission of certain actions and effects over a distance was not understood, even today, the ether (in the forms of various fields) is resorted to as a conceptual solution of the transmitting medium. However, any description of how the ether functions remains vague, but its existence in the forms of various fields was required by common sense and thus not questioned. Aether, expressed as various types of fields were discovered during the heyday of ether theories, according to which all space is permeated by a medium capable of transmitting forces between 3D matter particles. The electric and magnetic fields were interpreted as descriptions of the state of strain of the aether, so that the location of stored energy in space was like as it would be in a compressed spring. With the abandonment of the aether-theories following the rise of relativity theory, this imaginary model ceased to have validity. However, the original aether is preserved by us in the form of various fields in our theories. This is because an all-encompassing universal medium is essential to destroy the myth of 'action at a distance', which is the worst illogical assumption of modern science. There are many forms of fields, used in various theories, each one proposing different types of fields with vague properties of aether.

Space is also viewed as only a conception. Since the space provides an extent for real or 3D material bodies to exist, the concept of '3D material object' is necessary to define space. The concept of '3D material object' is linked to our sense-experiences, which continue through certain time. Existence of real objects is thus of a conceptual nature, linked to our sense-experiences. Existence or reality of material bodies are defined simply as concepts of our mind, which depends wholly on their being connected with our sense-experiences. Argument, supporting these types of theories, is that a rational being's thoughts and concepts are created by experiences of his senses with 3D material objects. These experiences are meaningful only with reference to his senses. His thoughts are products of his mind's activity. As long as the mind can act in certain way, existence or reality of objects is immaterial to understand his surroundings. Therefore, no wise logical consequences of the sense-experiences are required to understand the universe or actions in it. Although this argument overlooks that the presence of real objects is necessary to produce sense-experiences, without which mind's activity cannot take place, it is very useful to produce exotic and mysterious physical theories. In these theories, the space is often linked with another functional entity, 'time', to form another functional entity called the 'space-time continuum'.

Quantum of matter:

'Quantum of matter' is postulated as the basis of the alternative concept given in the 'Hypothesis on MATTER'. No other imaginary particles or assumed properties are envisaged in this concept. Development and apparent action of matter bodies strictly follow cause and effect relations.

A quantum of matter is postulated as a real matter particle that has positive existence in space. It is a very small bit of matter. It has its existence in all spatial dimensions, however small such measurements may be. Each quantum of matter is an independent matter-body and it keeps its individuality under all conditions. Quantum of matter cannot be divided, destroyed or created. Different quanta of matter may contain different quantities of matter. Majority of quanta in nature are of somewhat equal in their matter contents. Entire space is filled with quanta of matter in definite structural formations. [Space is a functional entity that indicates the place of existence of quanta of matter. Space has no other functions. Since the space has no physical form or structure, it cannot be distorted.].

Matter content, at nearest points (within a quantum or between quanta in direct contact in the same spatial dimensions), has adhesive property (a tendency to merge) and matter content of a quantum tends to maintain the integrity of the quantum under all conditions. Due to the adhesive property of its matter content, a free quantum tends to grow in one spatial dimension, while reducing its measurements in all other spatial dimensions. Even though, the dimensions of a quantum in the spatial dimensions, other than its single spatial dimension, are negligibly small, the quantum has positive existence in all three spatial dimensions. Thus, a free quantum is a 1D matter-body with positive existence in all spatial dimensions. A quantum of matter has a natural tendency to grow in its own single spatial dimension. Reducing the length of a free quantum, by external means, compels the quantum to grow into second spatial dimension. Similarly, reducing the area of a 2D quantum, in its spatial plane, compels it to grow into the third spatial dimension. If left free, in free space, a quantum of matter will grow in length indefinitely.

During the lengthening process of a quantum, its ends may come in contact with other quanta, which happen to be in its spatial dimension. Under such condition, the lengthening process of the quantum is restricted. Matter contents of the quanta, in contact in the same spatial dimension, interact to move both quanta towards each other's ends, together to form a junction and turn the quanta to bring their bodies in a straight line. In this manner, free quanta in space tend to form one-dimensional chains. Due to frequent break downs of these chains and availability of free quanta to migrate into the 1D quanta-chain, there are far too many quanta in any quanta-chain. Due to excess number of quanta of matter, forming a chain, they are held at reduced lengths in their one-dimensional status. Tendency of the quanta in the chain, to grow in length, keeps all the quanta in the quanta-chain at compressive pressure from their ends. Normally, quanta in a chain are maintained at the brink of their growth into second spatial dimension. If the lengthening-quantum encounters quanta in other spatial dimensions, the quantum will not be restricted in its growth. Quanta in different spatial dimensions but passing through the same point, in space, coexist at the point. A quantum of matter can express its individuality only in the spatial dimensions of its existence.

Although the quanta of matter in their 1D status are real matter bodies, as 3D beings, we are unable to appreciate their real existence in our 3D spatial system. Because of this difficulty, we may consider quanta of matter in their 1D and 2D states as functional entities.

2D energy field:

A junction may be formed by any number of quanta of matter in the same plane. Quanta, forming a junction settle (radially) around the junction point, in the same plane, with equal angular difference between neighbouring quanta. However, junction points with four quanta of matter (neighbouring quanta perpendicular to each other) provide most stable configuration. For this, the quanta-chains in a plane settle perpendicular to each other and crossing at the junction points to form a latticework. Each quantum of matter occupies one side of a square formed by the quanta. Only quanta of (somewhat) equal matter contents make stable latticework by quanta-chains. This latticework structure, formed by the quanta of matter, is a 2D energy field. A 2D energy field extends infinitely in its plane, in all directions.

Although a 2D energy field is made up of inflexible quanta of matter, its latticework structure makes it very flexible in its plane. Distortions of limited magnitude are tolerated within a 2D energy field. During distortions: (1). Quanta of matter at a junction point are angularly deflected from their stable alignment with respect to each other and/or (2). Quanta of matter in the quanta-chains vary their length, depending on the variation of compressive pressure from their ends.

Angular displacements of quanta of matter at a junction point invoke reactive force on the quanta to return to their stable positions. Similarly, a change in the length of a quantum also invokes reactive force in the latticework to restore its stable configuration. Any distortion in the 2D energy field is always opposed by a reaction. This reaction tends to restore the stability and serenity of 2D energy field. Thus, it becomes an inherent property of the 2D energy field to strive towards its stable state. In its stable state, a 2D energy field is isotropic, homogeneous and serene. A 2D energy field, considered as a whole, is steady in space. Small local distortions in it may be transferred within its plane. Hence, the 2D energy fields can provide an absolute reference in space.

Due to latticework structure of a 2D energy field and its inherent property of stabilization, distortions in a 2D energy field cannot be contained in a locality. Any distortion is bound to spread-out in the latticework. If there is an external cause, the distortions tend to be transferred in the direction of the cause.

Sequential spread of distortion from one latticework square to the next introduces a time delay in the development and transfer of the distortions. As soon as the cause is removed, latticework structure tends to regain its stability. However, the distortions, contained in the latticework, will continue to move in its original direction, unless they are removed by an external agency, by introducing equal but opposite distortions in the latticework. This property of time delay during the development and transfer of distortions and the constant speed of their transfer through the 2D energy field gives rise to the property of inertia, that is presently attributed to matter bodies present in the distorted region of 2D energy field. A distorted region of 2D energy field is a distortion field. Due to the latticework structure of the 2D energy field, distortions in it can exist only in a closed loop arrangement. Every plane in space contains a 2D energy field. 2D energy fields in different planes, passing through a point, co-exist.

Displacements of quanta of matter (including the changes in their lengths) are tangible in 2D space system. They constitute ‘work-done’. Strain, produced in the latticework structure, by the distortions is the ‘energy’ associated with the work-done. Rate of distortions (work) being introduced into a 2D energy field latticework is the ‘force or power’. Ultimately, displacements of disturbances (matter bodies) in 2D energy fields are produced by transfer of latticework distortions from higher distortion-density region to lower distortion-density region. This is the action of a force. Whichever is the manifestation of force (gravitational, electromagnetic, nuclear, inertial, etc.), they all act in similar manner. Thus, fundamentally, there is only one type of force in nature. Force is generally associated with motion of a body and it simply means rate of work, irrespective of the nature of work or its source.

2D energy fields fill the entire space. This replaces the functional entity of space with a real entity. Due to the filling up of a volumetric space by the 2D energy field, the entire volume is occupied by quanta of matter. Total matter content within this volume of space is comparable with a 3D matter particle occupying the same volume of space. Since the 2D energy fields cannot act among themselves, matter content enclosed within this volume of space (in the form of 2D energy fields) cannot express itself to a 3D being. However, a 3D matter particle of the same volume is acted upon by the 2D energy fields. It is able to express itself to the observer. We recognize matter bodies by its expression to an observer. Therefore, even though the matter content of a volumetric space in the 2D energy fields remains hidden from observers, a 3D matter particle of the same volume within the 2D energy fields is observable. This is why the 3D matter is considered as real matter and 2D and 1D matter are considered as functional matter in this concept. This hidden part of matter in the universe may be called the ‘dark matter’.

3D matter:

Constituent quanta of matter in a 2D energy field are held under compression from (both) their ends. Should there be a local break down; a gap is created in the 2D energy field. Quanta of matter, which occupied the region of the gap as part of the latticework, are released from the latticework to be free floating bodies within the gap. As soon as the quanta become free, they start to grow in their single spatial dimension to increase their lengths, while attempting to regain their positions in the latticework. In the mean time, due to the compressive forces in the quanta-chains, they will grow into the gap and reduce the area of the gap. As result, many of the free quanta in the gap will not be able to migrate back into the latticework. Quanta of matter, which are unable to gain their position in the latticework, are gathered together, within the gap, by the encroaching quanta-chains. These free quanta are gathered and compressed by the 2D energy field, until the combined body of free quanta become a circular 2D disturbance within the 2D energy field. This gives rise to the property of 2D energy fields to reduce any disturbance in them to minimum magnitude. Magnitude of a disturbance is the length of its perimeter in contact with the 2D energy field. Tendency of the 2D energy field, to grow into a gap in it, is the gravitational action. Gravitational pressure (force) is enormously strong, that it can compress 1D quanta of matter into their higher spatial dimensions. If the matter content of the 2D disturbance is more than certain limit, compression on the disturbance, by the gravitational pressure, compel the constituent quanta in the disturbance to grow into their third spatial dimension. A disturbance, growing into the third spatial dimension, creates real three dimensional matter. In our sense, this is the creation of real matter from the postulated 1D matter particles (functional entities with respect to 3D beings). A reverse process describes reversion of real matter into its functional state.

Gravitational force is exerted by the 2D energy field in the direction away from the quanta-chains, which are exerting the force. It is of push nature. Gravitational force can act only on curved perimeter

(surface) of a disturbance. All 3D matter particles are disturbances with respect to the 2D energy fields. If the distortion-densities on opposite sides of a 3D matter particle are different, distortions tend to redistribute by moving in the direction of lower distortion-density region. While doing so, distortions in the 2D energy fields carry the disturbance within the gap, along with them. This causes displacement of the disturbance in space.

If there are more than one disturbance in a 2D energy field, extent of 2D energy field on the outer sides of the disturbances are greater than the extent of 2D energy field in between them. Gravitational force is proportional to the extent of 2D energy field that is applying the force. Hence, these disturbances experience greater gravitational forces on their outer sides, compared to the gravitational forces, experienced on their inner side. This causes a relative difference between the gravitational forces applied on either side of the disturbances. Resultant of the gravitational forces tends to move the disturbances towards each other. This is the apparent attraction due to gravitation. Bringing two disturbances, by the apparent attraction due to gravitation, to combine with each other, to form a larger disturbance is another manifestation of 2D energy field's property to reduce disturbances in it to minimum. All higher dimensional matter-bodies are disturbances with respect to the 2D energy fields

2D energy fields act on each of the disturbance separately. Simultaneous actions on two or more disturbances (bodies) considered together appears to be interactions between these disturbances. Since the apparent attraction between two disturbances is the resultant of differences in the gravitational actions on them, the action appears to be very feeble compared to other forms of natural forces.

Action of gravitational force/pressure on each matter-body is independent of all other matter-bodies. Development of distortions, about a matter-body, which produce the gravitational actions on it, is an inertial action (an action that produces the property of inertia). This takes place during the development of the basic 3D matter particle. Thereafter, the apparent interactions between matter-bodies, due to gravitation, are instantaneous. Hence, the action of apparent attraction due to gravitation takes place instantly on change of parameters or constitution of 3D matter-bodies. Changes in the parameters or constitution of a body are carried out by developing appropriate 2D energy field distortions about the body. Gravitational forces on the body changes simultaneously during this development. This causes instantaneous changes in the apparent gravitational attraction between two bodies, on changes of their parameters. No transfer of imaginary particles/energy from one body to another is required to produce changes in the apparent attraction due to gravitation between two matter bodies. However, the inertial motions of the bodies, under the apparent attraction due to gravitation, are again subject to inertial delay.

3D matter particle:

Larger 2D disturbances are further compressed by the 2D energy fields into their 3D state. During the creation of a 3D disturbance, unevenness of gravitational action on its surface causes ejection of the 3D disturbance (in full or in part) from the 2D energy field, where the disturbance was originally located. 2D energy field is everywhere in space. 3D disturbance can never escape from being in many 2D energy fields. Therefore, ejection of the 3D disturbance from the 2D energy fields of their existence is a continuous process. This creates the inherent property of a 3D matter particle to move in linear path in the 2D energy fields. The moving 3D disturbance is of disc shaped and its radial size is maintained at its critical value, which is common to all moving 3D disturbances. Asymmetry of ejection force on the 3D disturbance initiates its spin motion about one of its diameter. Eventually, gravitational actions on the 3D disturbance move it at a constant (highest possible) linear speed and spin it at an angular speed proportional to its matter content. 2D energy fields exert gravitational force by creating distortions in the region surrounding the 3D disturbance. All work (energy) required for the creation and motion of a 3D disturbance is stored in the 2D energy field distortions associated with it. As the distortions are transferred through the 2D energy fields at the highest possible linear speed, the 3D disturbance is also carried with the distortions. This 3D disturbance (disc-shaped matter-body, moving at a constant linear speed and spinning at an angular speed proportional to its matter content) and its associated 2D energy field distortions, together form a 'photon'. A photon is a corpuscle of radiation (infra red, light, x-rays, etc.). It has a matter-body, as its core and surrounding 2D energy field distortions (inertial pocket), facilitating its motions. Inertial pocket, about a photon's matter-body in any plane, has many similarities with electromagnetic waves. The core body and the surrounding inertial pocket give a photon, its dual nature. The core body provides the corpuscular nature and the inertial pocket provides the electromagnetic nature.

Photon moves through 2D energy fields. Moving 2D energy field-distortions (inertial pocket around the matter core of the photon) carry the matter body of the photon. There is a relative motion between the photon and the 2D energy fields. Relative motion causes resistance to the motion of the photon. However, at any instant, sufficient ejection force is produced by the inertial pocket to overcome this resistance. Since, both the resistance and the ejection force are produced by the 2D energy fields; this effectively reduces any drag on the photon to nil value. Thus, it becomes the inherent property of the 2D energy fields to move all disturbances in it (even in the form of 3D matter particle) at the highest possible speed. Ability of the ejection force to overcome resistance determines this highest possible speed, which we observe as the speed of light. Highest possible linear speed, for any region of 2D energy fields (space) is a constant.

Linear and angular speeds of a photon are with respect to the 2D energy fields. Its linear speed is a critical constant; because that is the highest possible linear speed it can move under the transfer of distortions in the 2D energy field, without causing break down of 2D energy field's latticework structure. An attempt to increase photon's linear speed tends to increase its matter content (by assimilating quanta of matter from surrounding 2D energy fields) rather than increasing its linear speed. An attempt to reduce photon's linear speed tends to reduce its matter content (by discarding quanta of matter into surrounding 2D energy fields) rather than reducing its linear speed. Hence, linear speed of light in any region space, in any direction is a critical constant. A photon traverses the same number of 2D energy fields' latticework squares in the same interval of time. (Note that the scale of time and distance are defined in terms of observed speed of light). Spin speed or frequency of a photon is proportional to its matter content. An attempt to reduce the linear speed of a photon reduces photon's matter content with corresponding reduction in its frequency rather than reducing its linear speed. Similarly an attempt to increase the linear speed of a photon increases photon's matter content with corresponding increase in its frequency rather than increasing its linear speed.

Usually, the observer is also located in the region of 2D energy fields, where the speed of light is considered. Under such conditions linear speed of light with respect to the observer is identical in all direction, irrespective of motions of the observer. This is because the linear speed of the observer with respect to the surrounding 2D energy fields is negligible, when compared to the linear speed of light with respect to the surrounding 2D energy fields. [A fish, floating in a water-current observes any other body, moving with respect to water current, as moving at its true relative speed with respect to the current, irrespective of the direction of its motion. If this relative speed of the bodies is constant with respect to the water-current, all objects within the current and moving with respect to the current appear to move at constant speed irrespective of their directions of motion. Relative speed of the fish and other moving objects within the current will come into prominence only when the fish is able to move with a speed comparable to the speed of moving objects with respect to the current]. If the observer is small enough to move with considerable speed with respect to the surrounding 2D energy fields, linear speed of light in the region will obey all physical rules of relative motion, as any other body's motion. Discrepancies appear only when the speed of light in different regions of space (with different 2D energy fields distortion status) are compared. This is how we came to regard the linear speed of light as variable, when the light is inside a medium within the region of the observer and the time as variable, when the light is outside the region of the observer.

Shape of the matter core of a stable photon is segmented spherical with convex curvature at the rear of each segment. Curvatures on the surface of photon's body vary continuously to provide the required ejection and spinning forces. A photon is the basic 3D matter particle and there are no other basic 3D matter particles. All other superior matter bodies are made up of photons, in various combinations.

Macro bodies:

Two (complimentary) high-matter-content photons, under suitable conditions, combine like a binary unit of spinning bodies (spinning about a common axis) moving in circular path about a common centre. This unit is a primary particle called biton. Bitons, in turn combine to form fundamental particles, atoms, molecules, etc., to form macro bodies. Each particle of a macro body has its constituent photons and associated inertial pockets. Due to the curved paths of photons in bitons, their inertial pockets are permanently in unstable states. Unstable inertial pockets of constituent photons combine to form distortion field of the biton. Distortion fields of all particles in a body, together form the matter field of the macro body. Matter field of a macro body contain enough distortions in it, to sustain the stability and integrity of

its particles and the combined body in its current state. Due to the latticework structure of the 2D energy fields, matter field of a macro body extends outside its body-dimensions. Magnitude of this extension depends on the size of the macro body and the distortion-density of its matter field. Distortion density, in the matter field, gradually reduces from the macro body's perimeter until all distortions are lost and the latticework squares of matter field becomes undistorted latticework of 2D energy field in space.

Additional 2D energy field distortions, introduced into the matter field of the macro body from an external source, induce macro body's whole body motion. Matter particles of the macro body are moved with respect to the 2D energy fields. Although the 2D energy fields are steady in space, it is the moving distortions in them, which are moving the matter particles of the macro body. Because of this arrangement, even though the matter particles are moving with respect to static 2D energy fields, no resistance is offered by the 2D energy fields to the motion of the body-particles. A macro body, moving through the 2D energy fields, does not suffer drag from the medium.

Distortions in the 2D energy fields move in straight lines, separately in each of the planes. Rotary motion of a macro body is produced by linear motions of body-parts in different directions at different linear speeds. If the constituent matter particles of a macro body are moved away (by another force) from the linearly moving distortions of a linearly moving macro body, linearly moving distortions will be lost from macro body's matter field into space and the macro body will stop responding to the lost distortions. State (of motion) of a macro body depends on the distortion-density of additional distortions (other than the distortions required to sustain the integrity and stability of the macro body and its constituent particles) and the distribution of the additional distortions in its matter field.

Introduction of distortions from external source into the matter field and their stabilizations within the matter field of the macro body, takes time. This time delay gives rise to the inertia, which is presently attributed to the body mass. Inertia is a property of associated matter field of a body (2D energy fields). Matter content of a body is inert. It is the associated 2D energy fields that produce all apparent actions/interactions, presently attributed to the matter bodies. Once, certain magnitude of distortions are introduced into a matter field of a macro body, it remains permanently within the matter field and continues keep the macro body in its current state indefinitely, until the distortions are lost or removed (neutralized by distortions in opposite direction) by an external force. Since the additional distortions (introduced by external source and moving the matter particles) in a matter field are associated with the matter particles, speed of their transfer is limited by the magnitude of distortions. Hence, a macro body may move at any speed, lower than the maximum permitted speed by the 2D energy field (less than the speed of light). As the speed of a macro body approaches the speed of light, constituent particles of the body break down to inferior particles until its speed reaches the speed of light. At the speed of light, only photons from the macro body survive. Beyond this speed no matter particle can move. This limits the speed of 3D matter bodies in space to less than the speed of light. Gradually, even the photons revert back to quanta of matter in the 2D energy fields. Continuous recycling of matter between 3D macro bodies (where the entropy increases) and 2D energy fields (where high order is maintained) keeps the entropy of universe within limits. Total magnitude of matter, in the form of 3D macro bodies in the universe, vary cyclically.

Inertia is a property of 2D energy fields, produced by their latticework structure. Apparent attraction due to gravitation is the product of difference in the extent of 2D energy fields on opposite sides of matter particles of a body. Both these phenomena have nothing to do with mass of a body, which is the mathematical relation between an external force on a macro body and its acceleration. Hence, differentiation into gravitational mass and inertial mass is arbitrary.

Distortion fields:

Application of gravitational actions, essentially, requires a gap in the 2D energy field. Gravitational force/pressure is applied by the 2D energy field on to a disturbance (even if it is in the form of 3D matter-body) within the gap. Gravitational force is applied on to the disturbance as long as it is in existence in the 2D energy field. Due to continuous application of gravitational action, latticework squares around the disturbance remain distorted as long as the disturbance is in existence. Directions of the distortions are inward from the (curved) perimeter of the disturbance, towards the centre of curvature (of the perimeter).

A matter-body is moved by the transfer of distortions in the 2D energy fields. Conversely, movement of a matter particle through a 2D energy field can be considered to produce distortions in the 2D energy fields. Two sets of distortions, acting in different directions on a matter particle tend to move the particle in a resultant direction. Movement of the matter particle in the resultant direction produces distortions in the 2D energy fields in the direction of motion of the particle, while the original distortions, which caused particle's resultant motion, are lost to the particle due to its displacement from the direction of transfer of the distortions. State of the particle in the new direction is maintained by the distortions caused by the motion of the particle in the resultant direction. A matter particle, moving under more than one set of distortions, produce independent set of distortions corresponding to its current motion, in the surrounding 2D energy fields.

Constituent (two) photons of bitons move in circular path. They are under constant action by distortions causing their linear and spin speeds at critical values and the distortions produced due to apparent gravitational attraction between them. Motions of these photons in resultant circular path create new sets of distortions in the 2D energy fields. These distortions constitute distortion field of the biton, which is angular in direction, around the biton. Number of bitons combines to form superior particles. Distortion field of a superior particle is the resultant of distortion fields of all its constituent bitons.

Distortion field of a particle is a local region in the 2D energy field outside the border of the particle. It does not require a discontinuity in the 2D energy fields. Due to the latticework structure of a 2D energy field, distortions in it, have to form a closed loop. If the distortion starts at a point, it has to spread through the 2D energy field and return to the starting point, so that there is no discontinuity in the latticework structure. Development of a distortion field is an inertial action. Unlike the distortions, which act on matter bodies due to gravitational actions, distortions in a distortion fields cannot act on matter bodies, because certain actions of the matter bodies are the cause of the distortions, which develop the distortion field and the distortion field has no ends at the border of the matter bodies. Overlapping two distortion fields change the distortion densities on either side of a matter-body. Tendency of 2D energy fields, to achieve homogeneity, tends to move the distortions from higher distortion-density region to lower distortion-density region. Transfer of distortions in the 2D energy fields carries the matter particles, which are producing the overlapping distortion fields, to move them in space (which appears as the attraction or repulsion between them). Displacement of matter-body in space is an inertial action. During this motion, additional distortions are created within the matter field of the bodies to change their state (of motion).

In order to simplify the explanations, complicated nature of distortions in a distortion field (in a plane), we may resolve the nature of distortions in a 2D energy field into various components. There are three possible varieties of distortions in a 2D energy field (latticework) – linear, angular and radial. Direction of a component of distortion field is indicated by the imaginary lines of forces. If the (linear) directions of two interacting components of distortion fields are in opposite directions, they tend to neutralize each other. If the (linear) directions of two interacting components of distortion fields are in the same direction, they tend to enhance each other

Linear distortion:

For linear distortion, latticework squares are compressed or expanded in the same linear direction. This gives rise to magnetic nature of a distortion field. Since there are no bodies that produce linear distortion fields, magnetic nature of a distortion field can be produced only by arranging number of bitons, which have angular distortion fields, in suitable array. End of the distortion field, from where the lines of forces appear to come out (of the body producing the distortion field), is called the North pole and the end of distortion field, to which the lines of forces appear to enter is called South pole. A small part of a curved line of force acts as a linear line of force. Hence, an angular distortion field, where its lines of forces have less than certain magnitude curvature, acts as linear distortion field (magnetic field).

Angular distortion:

For angular distortion, latticework squares are distorted in angular direction. Lines of forces are curved lines with arrows in clockwise or anti-clockwise direction. This gives rise to electric nature of a distortion field. Photons in the bitons move in circular paths. Hence, all bitons and all superior particles (they are unions of bitons) have electric fields. Due to the angular nature of electric field its lines of force are circular lines in the (resultant) direction of motion of photons in the bitons. Looking from one side, the lines of

force appear clockwise. This side of the electric field is the positive electric charge. Looking from the opposite side, the lines of force appear anti-clockwise. This side of the electric field is the negative electric charge. Electric charges are relative directions of an electric field. Since they are relative directions, electric charge of an electric field depends on the reference used. Electric charges have no independent existence as is believed today. Every electric field has both positive and negative electric charges. Both electrons and positrons have similar electric fields and electric charges.

Field forces or inertial action on corresponding bodies, produced by the interaction between electric fields, not only depend on the type of electric charges but also on the distance between them. At certain distance (zilch force distance) between two electric fields, they produce no field forces or inertial motions of the corresponding bodies. Beyond zilch force distance, due to lower curvature of lines of force, magnetic nature of the distortion fields dominate and the electric fields behave like magnetic fields. Electric nature of distortion fields (during interaction between two angular distortion fields) are exhibited only when the distance between them is less than zilch force distance, where their lines of force have greater curvatures.

Radial distortion:

For radial distortion, latticework squares are distorted in linear directions, radially towards or away from a central point. This type of distortions gives rise to a nuclear field. If the distortions are directed outwards from the central point, they produce repulsive nuclear field. Fundamental particles, associated with repulsive nuclear field (the electrons), apparently repel all other primary and fundamental particles. If the distortions are directed inward towards a central point, they produce attractive nuclear field. Fundamental particles, associated with attractive nuclear fields (the positrons), apparently attract all other primary and fundamental particles.

Properties of 2D energy fields:

A 2D energy field is a two-dimensional entity. It has only length and breadth as its fundamental spatial dimensions. A real entity in space essentially exists in all spatial dimensions of the space. Hence, however small the dimensional measurement may be, a 2D energy field has its existence in the third spatial dimension also. A volumetric space is made up of great many parallel planes, in contact. If the thickness of a plane is considered as nil or zero, any number of parallel planes cannot constitute a volumetric space. Therefore, parameters of a 2D energy field or other 2D bodies can be accurately determined only after evolving a mathematical system that can measure the thickness of a plane or breadth and thickness of a straight line.

2D energy fields (universal medium) have the following inherent properties:

1. Inherent properties of 2D energy fields are derived from the inherent properties of their constituent quanta and their mechanical structure of latticework formations.
2. 2D energy fields are two-dimensional entities made up of single-dimensional quanta of matter. Each 2D energy field exists and acts in its own plane.
3. 2D energy fields in different planes, passing through the same point in space, co-exist at the point.
4. Quanta of matter in a 2D energy field are held under compressive forces from their ends, in perpendicular quanta-chains, crossing at junction points of quanta.
5. In the stable state of a 2D energy field, constituent quanta of matter form sides of perfect squares in the latticework structure. A change from the stable state produces restoring reactive forces in the latticework structure.
6. 2D energy fields are self-sustaining entities. They strive to sustain their integrity, stability, homogeneity, isotropy and serenity.
7. Tendency of 2D energy fields to close-in any gap in them produces gravitational force/action.
8. 2D energy fields fill the entire space. Each 2D energy field extends indefinitely in all directions in its plane. No matter particles can exist outside 2D energy fields.
9. All higher-dimensional matter particles are disturbances with respect to 2D energy fields.

10. 2D energy fields tend to reduce disturbances in them to minimum either by reducing the sizes of the disturbances by shaping them circular and compressing to smaller size or by ejecting the disturbances out of themselves.
11. All 3D matter particles are created from, sustained by and reverted back into the 2D energy fields.
12. 2D energy fields provide an all encompassing medium for all apparent interactions between matter bodies.
13. On the whole, the 2D energy fields are perpetual and steady in space. No new 2D energy field is ever produced. They provide an absolute reference.
14. Region of 2D energy fields, about a matter-body, store the work in the form of distortions (energy in the form of strain due to the distortions) to sustain the integrity and stability of a matter-body and its state (of motion).
15. Distortions (forces) in two 2D energy fields cannot interact. Transfer of distortions or interactions between distortion fields are limited to the plane of each 2D energy field. Simultaneous actions in many planes appear to be an action in 3D space system.
16. 3D matter particles are displaced in space by the transfer of distortions in steady 2D energy fields. Absolute motions of matter bodies are with respect to the steady 2D energy fields.
17. 3D bodies are moved by the 2D energy fields rather than the bodies move through 2D energy fields.
18. Latticework structure of a 2D energy field causes sequential development of distortions in neighbouring latticework squares. Distortions, once developed, remain permanently within the 2D energy field, unless removed by external action. These phenomena give rise to the property of inertia.

Aether drag:

It was the failure to notice the assumed aether drag on earth's motion through the space that ended the progress in the search for an all-encompassing universal medium. This was unnecessary because the assumption of 'aether drag' itself is unwarranted. In the explanations above, it was shown that every basic matter particle is moved by 2D energy field at the highest possible speed. Basic matter particles, constituting primary particles, fundamental particles and higher matter bodies have their paths curved and sizes of their circular paths are limited within the primary particles. A macro body consists of millions of basic matter particles, moving in circular paths, within its body. Any motion of the macro body is achieved by simple displacements/deflections of basic matter particles' circular paths in space. It is the 2D energy field that is affecting such motion. Matter has no ability to move on its own. Since the '2D energy fields' is the one which is displacing macro body, there will be no relative motion or friction between them. Action is limited to 2D energy fields within and in the immediate neighbourhood of the macro body.

Motion of a matter body, through the 2D energy fields, is like the motion of a floating body in a narrow ocean current. Ocean current carries the body along with it and there is no relative motion between the floating body and the surrounding water. However, this floating body has a clear relative motion with respect to the vast ocean. Similarly it is the moving distortions in the 2D energy fields, which is moving a matter body. This part of 2D energy fields is a local region in and about the matter body. Distortions carry the matter body along with it and there is no relative motion or friction between them. However, with respect to the vast 2D energy field the matter body has a relative displacement in space.

Photons, during their motion through the 2D energy fields, experience resistance from the 2D energy fields. Photon's ejection (moving) force is also caused by the 2D energy fields. Speed of the photon is determined by the resultant of these forces. And this speed is the highest possible speed through the 2D energy fields that can be sustained without breakdown of 2D energy fields. Since the resistance from 2D energy fields is already accounted for in the motion of the photons, such resistance will not be carried further into the motion of 3D macro bodies. Therefore, 3D macro bodies will not experience any drag to their motion through 2D energy fields (space).

We are 3D beings. All our actions and observations are limited to 3D matter bodies. Hence it is impossible for us to observe or act on the 2D energy fields, directly. This does not preclude the existence

of 2D energy fields or their actions on 3D matter bodies. If all phenomena, related to matter can be logically explained by this concept, it should be recognised as true.

Conclusion:

2D energy fields in all possible directions, extending infinitely and filling the entire space provides an all- encompassing universal medium for the creation, sustenance and apparent interactions of three dimensional matter bodies. This avoids the assumption of action at a distance. Actions by 2D energy fields are the result of mechanical movements of its constituent quanta of matter, within the latticework. Since the distortions in 2D energy fields are the cause of all actions, fundamentally, there is only one type of force in nature. Manner of distortions in the 2D energy fields determine the type of force manifested. Inertia is a property of the 2D energy fields. Perpetuity of 2D energy fields bestows the universe with its steady state of existence.

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