

FIELDS

According to 'MATTER (Re-examined)'

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Abstract: 'Action at a distance through empty space' is an utterly illogical assumption, used in contemporary physics. In order to reduce irrationality of this assumption, different types of fields are used in explanations of various theories. Generally, these fields are undefined and quite vague in their structures, forms and actions. This essay attempts to briefly describe a real entity, made of matter in definite structural formations and with logical mechanism of actions, which can substitute for various types of undefined fields.

Keywords: Fields, inertial field, gravitational field, dynamic distortion-field, static distortion-field, magnetic field, electric field, nuclear field, magnetic potential, electric potential, electrostatic field.

Introduction:

'Action at a distance through empty space' is the most illogical assumption, used in contemporary physics. In order to overcome the assumption that physical influences can be transmitted through empty space, without any material or physical agency, fields are used to describe actions in all cases where two objects, separated in space, influence each other. Fields are assumed to condition space such that when an object is placed in it, the object experiences an effort. Effort, experienced due to a given field, exists only if the object itself is also a source of same kind of field. In description of a field; it is assumed that when source-object creates field (in every direction around it) receiver-object experiences same field, existing at its location. Effects of changes at source-object propagate outward through the field and are felt by receiver-object after a certain delay. The field is thus an intermediary for transmitting efforts. Each type of effort (electric, magnetic, nuclear, or gravitational) has its own appropriate field.

In contemporary physics, field is a region in which every point is affected by an effort. Since each point in a field has a value (in space and time), it is considered as a tangible entity. Field is also considered to occupy space, to possess momentum, to contain energy and to eliminate true vacuum. It appears as a real entity and works like extension of an object. Yet, it has no substance, structure or logical mechanism of actions, which are essential for real entities. Generally, fields are undefined and quite vague in their concepts.

Alternative concept, proposed in book 'MATTER (Re-examined)', considers field as a deformed region in universal medium. Depending on nature of distortions, distortion-fields about 3D matter-bodies may interact to influence each other, which in turn affect corresponding 3D matter-bodies. As part of universal medium (that fills entire space outside basic 3D matter-particles), distortion-field is a real entity made of matter, with definite structure and mechanism of actions. Its constituents, mechanism of formation, stability, structure and mechanism of actions are detailed in the book. Very brief description on its nature and classification into various 'fields' (as used in contemporary physics) is given in this essay. All conclusions expressed in this article are taken from the book 'MATTER (Re-examined)' [1]. For details, kindly refer to the same.

Universal medium:

Due to inherent tendency to maintain its integrity, structure-less matter fragments into extremely small bits called 'quanta of matter', which exhibits self-elongating properties. Matter-content of a quantum of matter reduces its spatial dimensions to minimum, until it becomes a single-dimensional entity. As matter-content provides its objective reality, a quantum of matter has positive existence in all three spatial dimensions at all times, however small the measurements may be. Because of structure-less nature of their matter-contents, quanta of matter in different spatial systems are able to co-exist at points of their intersections.

Property of self-elongation helps quanta of matter to form junctions, where their ends meet. Junctions, of four quanta of matter each, are most stable configurations. Numerous quanta of matter, meeting at junctions in a plane, together, form two-dimensional latticework-structure of 2D energy-field that extends to infinity in all directions in its plane. Every plane in 3D spatial system has one 2D energy-field each. All actions in a 2D energy-field are limited to its plane. Actions in one plane cannot affect actions in another plane or be transferred to another plane, directly. 2D energy-fields, crossing each other co-exist at points of intersection. They are self-stabilizing entities, held in compressed state. 2D energy-fields in all possible planes in 3D spatial system, together, form all encompassing universal medium that pervades entire space, outside basic 3D matter-particles and without voids. Universal medium substitutes for functional entity, space. It is generally homogeneous and steady, so that it can provide an absolute reference.

Combination of 2D energy-fields makes universal medium homogeneous with uniform matter-density equal to that of basic 3D matter-particle. All actions in nature, including creation of 3D matter, are carried out by universal medium. Latticework-structures of 2D energy-fields provide universal medium with possibility of anisotropy, required for deformations during actions. Deformed regions in latticework-structures of 2D energy-fields (universal medium) are distortion-fields. Distortions are formed by relative deflections (displacements) of quanta of matter in latticework-structures and they are the work-done about an entity. Distortion-fields in all planes passing through volumetric space about a macro body, together, form its matter-field. Matter-field of a macro body, in and around its perimeter, contains all distortions (work) required for formation and sustenance of its constituent 3D matter-particles and the macro body itself and additional distortions required for its whole-body motions.

Distortions in 2D energy-fields in all planes, passing through volumetric space of a macro body, together, form appropriate fields about it. As distortion-fields are constituted by additional distortions, they represent work done and store associated energy. We shall consider distortions in latticework-structure of a single 2D energy-field to describe various kinds of fields. Distortion-fields in all planes about a macro body form appropriate fields about it in 3D spatial system.

Gravitational field:

2D energy-field is a self-stabilizing latticework-structure, held under compression. A gap in latticework-structure breaks its continuity. Latticework-structure from all around the gap attempts to close-in and fill the gap. While doing so, it presses onto any object (which is not part of latticework-structure), present in the gap. This tendency of 2D energy-field to compress any object is gravitation. Magnitude of gravitation in any direction is proportional to extent of 2D energy-field in the direction from

where it is applied. Due to inward compression of latticework-structure, distortion-density nearer to the object is greater and distortion-density reduces as distance from object increases. Distorted region in 2D energy-field around the object is gravitational field about that object. Gravitational field is of static nature and maintains its magnitude as long as the object is in existence with constant parameters.

Extent of 2D energy-field from an object (in free space) is infinity in all directions in its plane. If there are more than one object in a plane, extent of 2D energy-field between them is equal to the distance between them, which is less than extents of 2D energy-field on their outer sides. Therefore, magnitudes of gravitation on outer sides of objects are greater than magnitude of gravitation on objects from 2D energy-field between them. As a result, the two objects experience resultant effort to move them towards each other. This dynamic part of gravitation is gravitational attraction. [Only this minor part of gravitation is considered in contemporary physics as gravitation]. Depending on parameters of objects, magnitude of gravitational attraction between them varies.

Displacements of 3D matter-bodies (under gravitational attraction) through universal medium produce additional distortions in latticework-structures of 2D energy-fields within their matter-fields. This action may be considered as conversion of gravitational action into inertial action. [Adjective inertial indicates actions related to inertia]. All actions are understood by their inertial effects on 3D matter-bodies.

Inertial field:

Continuity of latticework-structure of 2D energy-field is always maintained unless it breaks down locally. Distortions in a continuous latticework-structure cannot remain in one place. Distortions have natural tendency to spread (transfer) from region of higher distortion-density to region of lower distortion-density along straight-line paths. Once certain distortions have commenced their transfer, they do not stop unless neutralized or modified by additional distortions, introduced into same plane with the help of external source. These two characters combine to provide property of inertia to universal medium. Due to inertia of additional distortions in universal medium, a macro body maintains its state of motion in straight-line path; unless additional distortions are modified (macro body is affected by external efforts).

Distortions (work) in matter-field of a macro body, required for (a) creation and sustenance of its constituent basic 3D matter-particles (b) development and sustenance of constituent superior 3D matter-particles (c) Development of macro body and sustenance of its integrity are stored in its matter-field as intrinsic work associated with the macro body. Macro body's state of motion is determined by additional distortions introduced into its matter-field from external sources. These additional distortions continue to move macro body at constant linear speed in straight-line path. This part of additional distortions (work) form macro body's inertial field. Inertial fields carry associated macro body through universal medium at any (proportional) linear speed, limited by linear speed of light.

For a macro body, inertial fields for its rotary motion and linear motion are distinctly separate and they maintain their independence at all times, even while macro body appears to have resultant motion. As long as magnitudes of additional distortions in matter-field are no modified, magnitudes and directions of inertial fields remain constant. Hence they may be considered static in nature. Distortion-field (varying cyclically in magnitude) that is not associated with macro body, when transmitted through universal medium, is an electromagnetic field.

Dynamic distortion-field:

Photons are corpuscles of radiation (light, etc.). Each photon is constituted by disc-shaped 3D matter-core surrounded by distorted region (inertial-pocket) in universal medium. In order to maintain stability of photon and universal medium, it is essential for universal medium to move photons at the highest possible linear speed in straight-line path, while spinning their 3D matter-cores at speed proportional to their matter-contents. In stable condition of a photon, there are no interaction between photon's inertial-pocket and external universal medium. Instability of straight-line path of a photon compels universal medium to initiate stabilizing process by introducing additional distortions in inertial pocket.

Number of unstable photons moving through same path in rapid succession sustains part of additional distortions introduced by universal medium in its latticework-structures to act as separate distortion-field. This is the fundamental method by which distortion-fields are produced.

In order to sustain distortion-field about a 3D matter-body, movements of unstable photons in same direction along same path, in rapid succession, are essential. This is achieved by having pairs of photons moving about each other in common circular paths, in primary 3D matter-particles. Due to their circular paths, resultant distortions around their unions form circular (curved) distortion-fields. In order to sustain a circular distortion-field, flow of photons through same path is essential. Circular distortion-field ceases when paths of photons become stable along straight line. As continuous flow of photons is essential, these distortion-fields may be classified as dynamic distortion-fields. Basic circular (dynamic) distortion-fields, under different arrangements, form all other types of dynamic distortion-fields, with distortions of diverse natures. Average direction of distortions in a distortion-field about a macro body is resultant of relative directions of linear movements of unstable photons in it. Imaginary lines of force are used to indicate direction of a distortion-field.

There are only three methods by which latticework-structure of a 2D energy-field can be deformed. Latticework-structure can be deformed so that distortion-field appears in any direction with linear distortions, with curved/circular distortions or with radial distortions. Accordingly, depending on the nature of distortions, dynamic distortion-fields may be classified into magnetic, electric or nuclear fields.

Magnetic field:

Latticework-structure of a 2D energy-field, deformed in linear direction, forms a magnetic field. Magnetic field is a dynamic distortion-field, formed by arranging number of circular distortion-fields about an axis. Similar arrangements in all 2D energy-fields about an axis in 3D spatial system form a magnet. Direction, from where lines of force of magnetic field appear to start is assigned magnetic north polarity. Direction, towards where lines of force of magnetic field appear to terminate is assigned magnetic south polarity. Magnetic poles of a magnetic field are relative references, similar to electric charges. Hence, they depend on chosen reference. Similar magnetic fields augment each other and dissimilar magnetic fields reduce from each other.

Electric field:

Latticework-structure of 2D energy-field, deformed in circular/curved direction, forms an electric field. Electric field is a dynamic distortion-field, formed by distortions around circular paths of unstable photons in primary 3D matter-particles or by resultant of many primary electric fields about a point in space. Similar arrangements of electric fields in all 2D energy-fields, perpendicular to axis of a conductor along its length, 3D spatial system form an electric current. Direction, from where lines of force of electric field appear clockwise, is assigned positive electric charge. Direction, from where lines of force of electric field appear anti-clockwise, is assigned negative electric charge. (Electric charge is not a special entity). Electric charges of an electric field are relative references, similar to magnetic poles. Hence, they depend on chosen reference. Similar electric fields augment each other and dissimilar electric fields reduce from each other.

Nuclear field:

Latticework-structure of 2D energy-field, deformed in radial direction, forms a nuclear field. If lines of force are directed outward from a central point, it is repulsive nuclear field. If lines of force are directed inward towards a central point, it is attractive nuclear field. Nuclear fields are produced only about positrons and electrons. Nuclear field about positron is attractive and nuclear field about electron is repulsive in nature. Since distortions are radial, nuclear fields cannot augment each other to produce larger nuclear field than that can be produced either by positron or electron.

Static distortion-field:

As and when a dynamic distortion-field is deflected from its stable position with respect to neighboring dynamic distortion-fields, universal medium tends to restore its stable position. For this,

lattice-work-structures in universal medium are additionally deformed. This part of additional distortions gives rise to static distortion-field. It continues to exist as long as relative deflections of dynamic distortion-fields exist. Neighbouring atoms in a macro body usually acquire relative positions, so that the macro body, as a whole, is electrically and magnetically neutral, towards other neutral macro bodies. However, these arrangements can be off-set by various methods. Deflection of atomic axes of neighboring atoms/molecules from their relative stable alignments causes additional deformation in universal medium.

Magnetic potential field:

If additional distortions due to re-arrangement of atoms/molecules in a macro body exhibit resultant magnetic field about it, it becomes a magnet and is considered to have certain magnetic potential (field). Magnetic potential field between neighbouring atoms are essential in a conductor to produce electric current through it.

Electric potential field:

If additional distortions due to deflections of neighbouring atoms in a macro body exhibit resultant electric field about them, the macro body becomes electrically charged (ion). Deflection of atomic axis of an atom from its stable alignment with respect to atomic axes of neighbouring atoms is its electric potential. Average of magnitudes of electric potential of all atoms in a conductor is the electric potential of conductor. Additional distortions in universal medium due to atoms' deflections are electric potential (field). Difference in magnitudes of electric potential (fields) between neighbouring atoms is essential in a conductor to produce electric current through it. As single atom does not have neighbouring atoms, it cannot be ionised (electrically charged).

Electrostatic field:

Two electric potential fields (across a region in universal medium) strain lattice-work-structures of 2D energy-fields between them. Additional distortions introduced by the strain form an electrostatic field. Electrostatic field between two electric potential fields tends to support stability of the electric potential fields.

Conclusion:

Universal medium is a materialistic entity that fills entire space, outside basic 3D matter-particles. Deformed regions in it, about macro bodies, are real entities, called distortion-fields. They can replace undefined 'fields' (of different types), used currently in various theories.

Reference:

[1] Nainan K. Varghese, *MATTER (Re-examined)*, <http://www.matterdoc.info>

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