Gravitation and Gravity

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Abstract: Gravitation and gravity (gravitational attraction) are different phenomena. Gravitation is the compressive pressure on 3D matter by an (aether-like) universal medium that is structured by quanta of matter and fills the entire universe outside basic 3D matter-particles. Gravitational attraction is an apparent attraction resulting from separate gravitational (push) actions on two basic 3D matter-particles, towards each other.

Gravitation and Gravity

Introduction:

An alternative concept based solely on the existence of matter, proposed in the book 'MATTER (Re-examined)', logically explains the phenomenon of gravitation and its actions on three-dimensional (3D) material bodies. '*Substance is fundamental, and matter provides substance to all real entities*' is the only assumption used in this concept. Substance provides objective reality and positive existence to an entity. In the material world, matter provides substance to all real entities. Matter has no properties except its ability to exist, which compels a block of unstructured matter to fragment into minute quanta of matter. The tendency of free quanta of matter to reduce their existence to minimum spatial dimensions is the basis for all dynamic actions in the universe.

Free quanta of matter, during their elongation in a single spatial dimension, contact each other and form latticework structures in a two-dimensional spatial system. Latticework structures by quanta of matter in all possible planes, together, form a universal medium that fills the entire space outside basic 3D matter-particles, without scope for gaps or empty space. Basic 3D matter-particles and the universal medium, together, form a single block of matter with uniform matter-density. In this case, space and universal medium become synonymous. Space becomes a real material entity with form and structure. Universal medium is in direct contact with all basic 3D matter-particles in the universe and avoids 'action at a distance through empty space'. Being reasonably steady and stable, the universal medium that extends infinitely in all directions can provide an absolute reference.

Gravitation:

The tendency of constituent quanta of matter in the universal medium to elongate and the frequent migration of free quanta of matter into the structures keep the latticework structures of universal medium under compression (even without a limiting container). Compression of the universal medium makes it a self-stabilizing entity. Absence of latticework structure (gap) in any part of the universal medium, even if it is occupied by 3D matter, compels the surrounding latticework structure to move inward to close the gap or press inward on the 3D matter. Basic 3D matter-particles present in such gaps experience compression from the universal medium. This pressure is the gravitation. All 'natural forces' are different manifestations of the self-stabilizing property of the universal medium.

Gravitational pressure is enormously strong that it is able to compress a collection of free quanta of matter into higher spatial dimensional systems and form basic 3D matter-particles. Each basic 3D matter-particle has a disc-shaped (segmented spherical) core that spins about one of its diameters at a spin speed proportional to its 3D matter-content and moves at the highest possible linear speed with respect to the universal medium. Movements of a basic 3D matter-particle are accomplished by the transfer of structural distortions formed in the surrounding universal medium. All basic 3D matter-particles have identical radial measurements, which makes the magnitudes of radial gravitational pressure on them in free space, in any plane, identical. Their thicknesses are proportional to their 3D matter-contents.

Due to the latticework structure of universal medium, gravitation is effective only on curved surfaces of basic 3D matter-particles – positive action on convex surfaces and negative action on concave surfaces. As basic 3D matter-particles are disc-shaped, positive gravitation is fully effective only on their circular periphery. Flat faces of basic 3D matter-particles have very little curvature, and positive gravitational actions on these faces are just sufficient to maintain their critical motions by parting latticework structures in the universal medium. Gravitational actions on the circular periphery maintain 3D matter-density and constant radial size of a basic 3D matter-particle.

Gravity:

The magnitude of gravitation corresponds to the extent of the universal medium that exerts the pressure. The extent of universal medium between two basic 3D matter-particles is always less than the extent of universal medium on their outer sides. Hence, higher gravitational (push) actions on their outer sides tend to move the 3D matter-particles towards each other. This tendency is understood as gravitational attraction (or gravity). Gravitational attraction (gravity) is the resultant (relatively minor by-product) of separate

gravitational actions on two basic 3D matter-particles by the universal medium, which are pushed towards each other rather than attracting each other. However, for historical reasons, simultaneous linear displacements by the basic 3D matter-particles towards each other appear like an attraction between them, and, hence, called gravitational attraction or attraction due to gravity or simply as gravity.

Gravitational attraction takes place between two basic 3D matter-particles – not between superior material bodies. Each basic 3D matter-particle in one body, in conjunction with each of the basic 3D matter-particles in another body, produces parts of gravitational attraction between the bodies when their 3D matter-cores are coplanar. The sum of gravitational attractions between all possible pairs of basic 3D matter-particles in both material bodies, together, gives the average gravitational attraction between the bodies. As gravitation is effective only on convex surfaces, in order to invoke mutual gravitational attraction between two basic 3D matter-particles of any pair, their disc-planes have to coincide so that their peripheral surfaces face each other. In any other relative orientations, gravitational attraction between them may be absent, or in some cases, it may be one-sided.

Basic 3D matter-particles in various combinations form superior 3D matter-particles and larger 3D material bodies. Constituent basic 3D matter-particles in a larger body move at the speed of light in circular paths within the primary 3D matter-particles and spin at a spin speed proportional to their 3D matter-contents. Due to their continuous spin motions and linear motions in circular paths, disc-planes of basic 3D matter-particles in two larger bodies coincide rarely or after large intervals. Therefore, at any instant, gravitational attraction between two large material bodies is produced by extremely few of their constituent basic 3D matter-particles. This is the reason why the average magnitude of gravitational attraction between two larger bodies appears as a very weak effort (force) between them.

The number of basic 3D matter-particles in a body is proportional to the total 3D matter-content of the body. The equivalent of the total 3D matter-content of a body is often represented by its mass. Hence, the magnitude of gravitational attraction between two 3D matter-bodies is proportional to their masses. As the gravitational effort is radial in nature, its magnitude at a point corresponds to the inverse square of the distance from the origin. Therefore, gravitational attraction between two bodies corresponds to the inverse square of the distance between them. As the magnitude of gravitational attraction between two macrobodies depends on the unpredictable relative orientations of their constituent basic 3D matter-particles, the gravitational constant cannot be theoretically derived. It has to be empirically determined.

As a macrobody is heated, its constituent basic 3D matter-particles reduce their 3D matter-contents and spin speed (frequency). The total 3D matter-content of the macrobody reduces. Hence, the magnitude of gravitational attraction between two macrobodies varies as the temperature of one or both bodies is raised. Gravitational attraction will be highest when the bodies are in free space and in the coolest (possible) states.

While determining the acceleration due to gravity between two macrobodies, the larger body is assumed to be static, and the whole of the displacement is attributed to the smaller body. If one of the two bodies is elongated (or a twin body), the orientation of the elongated body (or the distance between members of the twin body) may affect the magnitude of gravitational attraction between the large body and the elongated (twin) body.

Conclusion:

Gravitation is a property of an all-encompassing universal medium that fills the entire space, outside basic 3D matter-particles (photons). Gravitational attraction between two 3D material bodies is an apparent dynamic action of gravitation, produced by the resultants of separate 'gravitational push efforts' on them. It is the difference in the extents of universal medium between two 3D material bodies and the extents of universal medium on their outer-sides, which causes resultant push actions to move them towards each other, rather than the mutual shadow-effect from assumed entities.

Reference:

'MATTER (Re-examined)', published by the author. https://www.matterdoc.in/

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