Chapter THREE

GRAVITATION

Gravitation is an inherent property of universal medium due to latticework-structure of 2D energy-fields. Gravitation and gravitational attraction are separate phenomena. While gravitation is (currently unrecognized) static phenomenon, gravitational attraction is dynamic by-product of gravitation. Chapter 3 explains origin and actions of gravitation in 2D spatial system.

3.1. Gravitation:

Whenever there happens to be a collection of independent quanta of matter (in any spatial dimension) within a gap in 2D energy-field, a disturbance is formed. Presence of a disturbance or gap in the plane of a 2D energy-field creates discontinuity in its latticework-structure. A gap in latticework-structure offsets stability of 2D energy-field in that region. Due to discontinuity in latticework-structure, stabilizing efforts on latticework-squares of 2D energy-field, from the direction of gap is not available. In order to restore its stability and continuity, latticework-structure of 2D energy-field exerts itself to close-in on the gap.

Latticework-structure of 2D energy-field moves-in by axial displacements of quanta-chains all around, towards centre of gap. Presence of disturbance in the gap prevents ingress of latticework-structure of 2D energy-field into the space occupied by disturbance (in gap). Effort by 2D energy-field to close-in continues as long as the gap exists, even if it is filled by a disturbance. Action of 2D energy-field, closing-in to fill up the gap, applies a pressure (or effort from all around) on a disturbance present within the gap, even if it is in the form of higher spatial dimensional object.

If this action is considered along a straight line towards the disturbance, it constitutes an effort. If all efforts around the disturbance are considered simultaneously, they constitute a pressure. Pressure, applied by latticework-structure of 2D energy-field on any disturbance within itself, is ‘gravitational pressure’. Phenomenon, producing gravitational effort or pressure on a disturbance in universal medium, is ‘gravitation’ or gravity.

Gravitational pressure is produced due to inherent property of 2D energy-fields (universal medium) to remain stable, continuous, homogeneous, isotropic and serene. Because of this property, latticework-structures of 2D energy-fields always tend to fill up any gap in it, even if other objects occupy the gap. 2D energy-field continues to apply gravitational pressure on a disturbance until its own continuity can be restored by removal of disturbance from it. Its continuity cannot be restored as long as the disturbance is in existence within its plane. To invoke a gravitation, it is necessary to have a discontinuity (a gap) in latticework-structures of 2D energy-fields.

3.1.1. Range of gravitation:

Requirement of discontinuity in latticework-structures of 2D energy-fields is the factor distinguishing gravitational effort from other types of 'natural forces'. Being a field effort (an effort created within 2D energy-field, by itself), gravitational effort is also produced by an imbalance in latticework-structure of 2D energy-field, due to presence of disturbances in it. Unlike for other forms of field efforts (which are produced by interactions between distortion-fields in small regions of universal medium and have limited range in space), entire fabric of 2D energy-fields in direction away from the gap applies gravitational effort or pressure onto the disturbance in gap.

2D energy-fields extend infinitely in all directions in their planes. However far two disturbances may be; at least one 2D energy-field in plane(s) passing through both of them is continuous but for gaps formed by other disturbances. Distance between disturbances does not limit effects of enclosing 2D energy-field on them. Hence, gravitational pressure or effort is of long-range. Its range is limited only by the extent of space, which is infinite.

Gravitational effort or pressure is a product of latticework-structures of 2D energy-fields in universal medium. Hence, magnitudes of gravitational efforts or pressures are directly related to extent of 2D energy-field, applying them. Larger the extent of 2D energy-field, greater is magnitude of gravitational effort. In free space, extent of 2D energy-field is infinite. Hence, range of gravitational effects is also infinite. In other cases, extent of 2D energy-field from one disturbance to another is the distance between them. Thus, distance between two disturbances is one of the factors determining magnitudes of gravitational effects.

3.1.2. Nature of gravitation:

Gravitational pressure (on a surface of a disturbance) or gravitational effort (in straight-line on a disturbance) is an inherent property of universal medium. Wherever there is a discontinuity in the fabric of 2D energy-field, its latticework-structure all around the gap exerts itself on any entity that happens to be within the gap. Magnitude of effort, applied by 2D energy-field, due to its property of gravitation is proportional to extent of 2D energy-field in the direction of incoming effort (away from gap). Extent of latticework-structure of 2D energy-field applies gravitational effort such as to move a disturbance (entity within gap), away from itself. Therefore, basically, gravitational effort is apparently of 'repulsive nature'. Gravitational effort produces a push action.

Gravitation is an inherent property of universal medium due to latticework-structures of 2D energy-fields. It is not a mysterious property of mass or matter-content of a matter-body, as is currently believed. It does not emanate from matter-content or mass of a matter-body but from latticework-structures of 2D energy-fields in universal medium, in which a matter-body exists.

Because of 2D energy-field's infinite extent in space, extent between any two objects (disturbances) is always less than its extents outside these objects. Therefore, gravitational effort on each of these objects from space between them is less than gravitational effort on them from their outer sides. This converts apparent repulsive nature of gravitational effort to appear as an attraction between disturbances (objects). Two disturbances in same plane, when pushed simultaneously towards each other, appear to attract each other. (Apparent) attraction due to gravitation or gravitational attraction is a minor aspect of gravitation, which deals with its dynamic aspects.

When simultaneous gravitational actions on two matter-bodies are considered as an attraction between them, gravitational effort appears as originating from participating objects. This has led to misconception that "*every body in the universe attracts every other body due to gravitation*". In fact, it is the universal medium (on outer sides of these objects), which is pushing the objects towards each other against smaller efforts from in-between. There is no transfer or exchange of force, energy or imaginary particles between matter-bodies under gravitational attraction. Gravitational actions take place between each of matter-bodies and universal medium, separately. This is the reason why gravitational attraction appears to be acting through any screening (macro) body, however dense it may be and is able to make instantaneous changes in its magnitude, on modification to parameters of one or both matter-bodies.

Since a 2D energy-field extends in all directions in its plane and gravitational effort is applied from all directions in a plane, gravitational action constitutes a pressure. Asymmetry in the shape of a disturbance can produce an imbalance in efforts around its periphery and compel disturbance to assume circular shape. [Macro-bodies are union of multiple numbers of basic 3D and fundamental matter-particles. Each of these basic 3D matter-particles is a disturbance with respect to universal medium. Gravitational pressure is applied on basic 3D matter-particles of a macro body rather than on macro body. Hence, asymmetry in the shape of macro-bodies do not produce imbalance in gravitational pressure on them]. Difference in extent of universal medium in any direction, from a disturbance, also produces imbalance of gravitational efforts. Such an imbalance tends to produce translational movement of a disturbance. (See section 7.2)

3.1.3. Strength of gravitation:

Gravitation emanates from every point (or unit area) of latticework-structure of 2D energy-field. 2D energy-field has negligible thickness and so effects of gravitational pressure or effort from a 2D energy-field are confined to its plane. All factors (including shape of perimeter of disturbances) related to contact between a disturbance and 2D energy-field, together; determine magnitude of gravitational effort on a disturbance, in any direction. Magnitude of gravitational effort, from any direction, on a disturbance is related to extent of 2D energy-field (in that direction) acting on it, curvature of

disturbance's perimeter and angle subtended by disturbance in the plane of 2D energy-field.

Effort of (apparent) interactions, between two disturbances in a 2D energy-field (due to differences in gravitational efforts on them), increase as distance between them is reduced. (Apparent) interaction between disturbances is only an illusion. Actual interactions are taking place between 2D energy-fields and each of the disturbances, separately.

Application of gravitational effort is a continuous process. As long as a disturbance is in existence, gravitational effort is effective on its periphery from surrounding universal medium. Variations in magnitude or shape of a disturbance affect magnitude of gravitational effort, instantly. Thus, magnitude of gravitational attraction between two matter-bodies is modified instantaneously, on modification of parameters of either of the matter-bodies, without help from transfer of any virtual or assumed particles.

A point in a 2D energy-field is considered as an area of minimum or negligible measurements and that is a part of plane of 2D energy-field. This point may be considered as a hypothetical 2D disturbance in 2D energy-field and having minimum or negligible area. Extent of 2D energy-field in free space is infinite in any direction, in its plane. Space is considered free when it is devoid of all disturbances (including 2D or 3D matter-particles, transmitted distortions or macro bodies) other than the disturbance or macro body, under consideration. Such a region of space is filled with undistorted 2D energy-fields in all directions.

For present discussion, only one plane and latticework-structure of 2D energy-field in that plane and 2D disturbances in that plane are considered. Since disturbances, considered, are of 2D nature, other 2D energy-fields passing through 2D disturbance in various directions need not be considered. 2D energy-fields in other directions/planes co-exist with 2D disturbance (passing through the disturbance) without affecting it. Since 2D disturbance creates no discontinuity in 2D energy-fields in planes, except its own plane, there are no interactions between them. If a disturbance is of 3D nature, 2D energy-fields in all planes passing through 3D disturbance are interrupted. Presence of 3D disturbance in 2D energy-fields breaks continuity of their latticework-structure. All affected 2D energy-fields act on the disturbance, separately, each one in its own plane. Total gravitational effect on a 3D disturbance is the resultant of effects by 2D energy-fields in all planes passing through it.

When a point-disturbance, situated in a plane in free space is considered, extent of 2D energy-field in every direction in that plane is infinite. Magnitude of gravitational effort is proportional to extent of 2D energy-field. Hence, gravitational pressure on a point in free space is maximum possible value and its magnitude is constant. Let value of this constant be G_1.

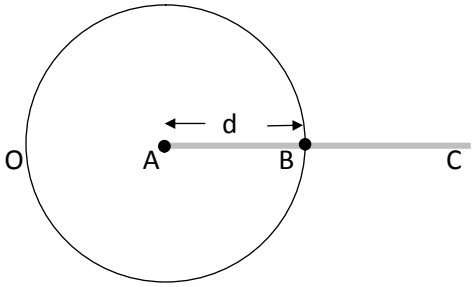

Figure 3.1

In figure 3.1, let A be a point-disturbance in a 2D energy-field and let B be a point of unit measure (of length) on circumference of circle, OAB. Circle OAB, has its center at A and its radius AB is equal to 'd'. Spatial dimension of point B, being along the perimeter of circle OAB in a 2D plane, is of single spatial dimension − length. (An infinitesimal part of perimeter of a circle can be assumed as a straight line). Gravitational effort by 2D energy-field, on disturbance A through point B is a fraction of total gravitational pressure applied on disturbance A by 2D energy-field, through entire length of perimeter of circle OAB.

$$\text{Gravitational pressure on point A} = G_1$$

$$\text{Perimeter of circle OAB} = 2\pi \times d$$

$$\text{Gravitational effort on point A through point B} = \frac{G_1}{2\pi \times d} \qquad \textbf{(3/1)}$$

Gravitational effort, on point A (disturbance) through point B (reference) in a 2D energy-field plane, is inversely proportional to distance between point of disturbance and reference point and directly proportional to gravitational constant in 2D spatial system (in a 2D energy-field).

A smaller disturbance has shorter distance from its center to perimeter. Hence, smaller a disturbance is, greater is gravitational effort felt at every point on its circumference. As a disturbance becomes smaller, gravitational effort on its periphery increases correspondingly. However, this equation will breakdown when value of radius, d, becomes too small. Gravitational effort is present only in cases of disturbances, which have real existence in space, with positive value of radius, d, above zero. That is, a disturbance should be large enough to occupy at least a minimum specified area in a 2D energy-field.

3.2. Application of gravitation:

Although gravitational effort is also a field-effort, produced by imbalance in latticework-structure of 2D energy-field, it is distinct from other forms of field-efforts in certain aspects. Accordingly, gravitational effort (in 2D spatial system) is treated separately here. Field-efforts, like; electric, magnetic and nuclear efforts are considered, elsewhere in this text as a group in chapter 11. All other forms of efforts like mechanical, inertial, frictional, etc., which are caused by inertial actions of field efforts, are also considered separately as a group in chapter 5.

Gravitation is a long-range effort, applied continuously on disturbances (including basic 3D matter-particles). To produce gravitational effort on a disturbance, every latticework-square in 2D energy-field, away from the disturbance, bears certain distortion. Magnitude of distortions in latticework-squares in 2D energy-fields diminishes gradually as distance from disturbance increases. Gravitational effort is modified instantly on changing any parameter of disturbance (or basic 3D matter-particle). Gravitational effort is applied by latticework-structure of 2D energy-field, directly onto disturbance, to which it has direct (physical) contact. Gravitational efforts require no other medium or carrier. 2D energy-fields are in direct contact with all disturbances in them. 2D energy-fields are everywhere in space. Consequently, no higher spatial-dimensional matter-bodies can escape gravitational effects, in universal medium.

Gravitational effort is produced only when there is discontinuity in latticework-structure of 2D energy-field. Effort, exerted by tendency of quanta of matter in latticework-structure, to expand in their single spatial-dimension is the reason for gravitational effects. As and when there is a gap (occupied by a disturbance) in quanta-chains, forming a 2D energy-field, quanta of matter on either side of gap tend to close-in (grow into) on the gap to re-establish continuity of quanta-chain.

If there happens to be a disturbance of any kind (2D or 3D matter-bodies) within the gap and they occupy the plane of 2D energy-field, expanding quanta of matter are unable to pass through them to establish continuity of latticework-structure of 2D energy-field. Expansion of quanta of matter and resulting extension of 2D energy-field into the gap is prevented by presence of disturbance in the gap. Effort, exerted by expanding quanta of matter, is applied on disturbance (matter-particle), present in the gap. Such effort ceases only when disturbance is removed from 2D energy-field and continuity of its latticework-structure is restored.

A 2D disturbance co-exists with 2D energy-fields in all planes other than in its own plane. A 2D disturbance does not create discontinuity in 2D energy-fields of other planes. Consequently, a 2D disturbance is acted upon by gravitational effort / pressure produced only by 2D energy-field in its own plane. Since a 3D disturbance occupies space of more than one 2D energy-field, all 2D energy-fields in planes passing through 3D disturbance act on it.

Attempt by quanta-chain in 2D energy-field, to move axially towards centre of gap in it, applies gravitational effort. If such axial movements are not permitted, gravitational effort cannot act on a disturbance, but gravitational effort remains dormant as long as disturbance is present. We may say that after stabilization of a disturbance in a gap, gravitational effort become inactive but remains being applied.

Magnitude of gravitational effort depends on extent of 2D energy-field in the direction from where effort is being applied. Its dependence on angle subtended by 2D

energy-field is explained in section 3.4.2 and effect of curvature of disturbance's perimeter is considered later in this section.

Since gravitational effort is effective from any distance up to the limit of extent of 2D energy-field (which extends to infinity in free space), gravitational effort is a long-range effort. That is, gravitational effort in any direction, felt at a point, is applied by combined action of all quanta of matter in latticework-structure of 2D energy-field in that direction. It is the total number of quanta of matter (extent of 2D energy-field) acting on a disturbance, which determines magnitude of gravitational effort (within certain limitations) on a point on periphery of a disturbance.

Unlike gravitational effort, all other field-efforts are produced due to angular displacement (with or without an axial movement) of constituent quanta of matter in 2D energy-fields. There need not be a discontinuity of their latticework-structures. They are reactions, applied by constituent quanta of matter of latticework-structure, trying to regain their stable position within quanta-chains, forming 2D energy-fields. Different manifestations of field-efforts may be associated with each other or appear and act on or about a 3D matter-body simultaneously.

During (apparent) interactions, involving basic 3D matter-particles, gravitational effort is always present. Because, basic 3D matter-particles are disturbances with respect to 2D energy-fields and it is the gravitational pressure, which creates and sustains them. All 2D and 3D matter-particles break continuity of 2D energy-fields of their existence. They exist within gaps formed in 2D energy-fields.

3.2.1. Action of gravitation:

In this section, we shall consider movements and displacements of quanta of matter (due to gravitation) within latticework-structures of 2D energy-fields. Movements and displacements of macro bodies (due to gravitation) are explained later in this text.

2D disturbance is formed in a gap in latticework-structure of a 2D energy-field. During formation of a 2D disturbance, its matter-density (or quantity of quanta of matter per unit area in its plane) being low, gravitational effort, generated in 2D energy-field, produces axial movements of quanta-chains towards (center of) disturbance. Movements of quanta of matter, into space of gap, shrink it and reduce size of disturbance, contained within the gap. During size reduction of a disturbance, space occupied by it is reduced along with its perimeter, in its plane. Reduction in its size reduces disturbance's perimeter, which is its magnitude.

Reduction in size of a disturbance increases magnitude of gravitational pressure on it due to increase in curvature of its perimeter. Reduction in magnitude of a 2D disturbance does not change its matter-content, but increases its matter-density in its plane. Unless additional quanta of matter are added to a 2D disturbance, its matter-content remains

constant. It is the variations, in the extent of vacant space between adjacent quanta of matter in its plane, which determines matter-density of a 2D disturbance. Larger gaps produce lower matter-density. When there are no gaps between quanta of matter in a 2D disturbance, its matter-density is equal to that of a quantum of matter.

In a 2D disturbance, constituent quanta of matter are not arranged in any order but they are gathered together at random. Each of them is constantly trying to grow in its own spatial dimension and thereby tries to occupy more space in its spatial dimension. Haphazard expansion of quanta of matter creates gaps (vacant space within its plane, but occupied by 2D energy-fields in other planes) between them. Action of gravitational effort is against this tendency of quanta of matter to expand gap in 2D energy-field.

Gravitational pressure confines quanta of matter of 2D disturbance to space available within the space of the gap, reducing at a steady rate. Reduction in its size increases 2D disturbance's matter-density. This process continues until matter-density of 2D disturbance has reached a 'maximum limit' in 2D spatial system. At maximum matter-density, all quanta of matter in the disturbance are transformed into their 2D spatial state in a plane and they are brought to stay in contact with each other. There are no gaps between constituent quanta of matter. Quanta of matter in middle regions alter into appropriate geometrical shape and they fit with each other without gaps between them. Gaps between quanta of matter, in the plane of disturbance, reduce matter-density of the disturbance.

Action of gravitational effort, from all around a disturbance, raises its matter-density. Measure of functional entity, which represents total resultant motion of quanta of matter (work) or stress due to strain of quanta of matter in latticework-structure of 2D energy-field around a 2D disturbance, is the energy associated with it. Energy expended by 2D energy-field is stored in its own latticework-structure around 2D disturbance in the form distortions (work), which may be considered as pressure energy in universal medium about the disturbance.

At highest matter-density (in 2D space system), matter-content within a 2D disturbance can not be shrunk further but efforts by 2D energy-field continue to act all around 2D disturbance from opposite directions. Further movements of quanta-chains of 2D energy-field towards the disturbance are possible only if part of its matter-content is removed from its plane.

In a hypothetical case, where removal of matter-content is not permitted from the plane, actions of gravitational effort on 2D disturbance come to a halt at this stage. That is, though gravitational effort is present, it cannot produce further movements of quanta of matter of latticework-structure towards (centre of) 2D disturbance and hence it is not acting on the disturbance any more. No more work is done on or about the disturbance.

Hence, energy transfer does not take place from universal medium into surroundings of 2D disturbance.

Though gravitational effort is not active, it is always present on the disturbance and attempt of gravitational effort to act is continuously maintained. Gravitational effort can act again on 2D disturbance only when, for any reason, axial movements of quanta-chains of 2D energy-field are permitted towards 2D disturbance, in their spatial dimensions. Reasons for such permission may be a reduction in matter-density of 2D disturbance by loss of matter-content or a reduction in magnitude of gravitational effort applied on opposite side of 2D disturbance.

In case of a reduction in matter-density (internal pressure) of a 2D disturbance, quanta-chains in latticework-structure of 2D energy-field from all around are permitted to move towards (centre of) 2D disturbance, whatever is the condition of gravitational effort on opposite side of its perimeter. Gravitational effort can now act on 2D disturbance and if equal magnitude of gravitational effort is also acting from opposite direction, they will jointly reduce space occupied by disturbance and thereby compress 2D disturbance back to highest matter-density in 2D spatial system. Gravitational pressure on disturbance stops its action when its matter-density reaches highest value in 2D spatial system, once again. After this, gravitational effort continues to be applied on 2D disturbance but it remains inactive. Similar actions, automatically maintain matter-density of a stable 2D disturbance, at constant (highest) level.

Magnitude of gravitational pressure, on a 2D disturbance, depends also on curvature of its perimeter. If curvature is relatively small, magnitude of gravitational pressure, on a 2D disturbance is much lower. It can be neutralized by a small increase in matter-density (internal pressure) of a 2D disturbance. Hypothetical highest matter-density mentioned above, without taking curvature of disturbance's perimeter into consideration, is only a theoretical concept to explain actions of gravitational pressure on a disturbance. balance between internal pressure of a smaller sized disturbance and gravitational pressure acting externally on its perimeter is achieved by a reduction in gravitational pressure around the disturbance due to 'jamming effect' of 2D energy-field, as explained in section 3.3.3.

Action of gravitational pressure on a 2D disturbance compresses its matter-content. While doing so, latticework-squares in 2D energy-field, nearer to the 2D disturbance, also get compressed. Latticework-squares nearer to a 2D disturbance achieve higher degree of distortions than latticework-squares farther from it. Development of distortions, around a 2D disturbance, produces a distortion-field about it. This region of 2D energy-field with deformed latticework-structure is 'gravitational-field' about a 2D disturbance. Gravitational-field of a matter-body is the distorted region of universal medium around a matter-body (macro body).

3.2.2. Motion by gravitation:

Should gravitational effort on any one side of a 2D disturbance diminish, matter-density in the disturbance is bound to reduce. This facilitates axial motion of quanta-chains of latticework-structure of 2D energy-field from opposite direction, towards 2D disturbance. Gravitational effort becomes active on 2D disturbance once again. Action of gravitational effort attempts to increase its matter-density by moving the side of 2D disturbance inward. Since gravitational effort on opposite side of 2D disturbance is maintained inactive (or magnitude of its action on opposite side is reduced), this attempt does not result in raising 2D disturbance's matter-density.

As long as magnitude of gravitational effort on opposite side of a disturbance is kept lesser, this gravitational action continues. Gravitational effort, on one side of a 2D disturbance, continues to move that side of disturbance in the direction of effort. Gravitational effort on one side of a 2D disturbance (in an attempt to compress it) is large enough, it helps to tear latticework-structure of 2D energy-field and create passage for the disturbance to move through the 2D energy-field. If gravitational effort is not strong enough, 2D disturbance will move only so much as is required to create enough reaction from latticework-structure of 2D energy-field to oppose resultant gravitational effort and stop its action to move 2D disturbance. This is how a gravitational effort moves disturbances (matter-particles).

If matter-density of a 2D disturbance can be kept constant at highest level, by some means, irrespective of condition of gravitational effort on its opposite side, gravitational effort cannot act on the disturbance. This is because no axial movements of quanta-chains in 2D energy-field are permitted towards (the centre of) disturbance. Even if gravitational effort on opposite side of 2D disturbance is totally absent, gravitational effort cannot act on a 2D disturbance, whose matter-density is at highest level. (This is a hypothetical case, disregarding balance between internal and external pressures).

Action of (work done by) gravitational effort takes place only when certain axial movements of quanta-chains of 2D energy-field are permitted towards a disturbance, in the direction of effort. Contrary to present beliefs, gravitational actions are neither universal nor constant. Actions of gravitational effort, including gravitational attraction, depends on many factors like; surface shape of basic 3D matter-particles, variations in magnitudes of gravitational efforts applied from different directions, etc. Inertial motions of disturbances, which are at highest matter-density, are produced due to their shape rather than a change in their matter-density, as explained below.

3.2.3. Pressure energy of disturbance:

Conventionally, during a work is being done, energy (measure of a functional entity denoting ability to do work, which represents total resultant stress produced by displacements of quanta of matter in universal medium about a disturbance) is expended.

By this concept, work is the real primary entity, which creates other functional entities like, force, power, energy, etc.

To do additional work about a macro body by inertial action, work-done in another macro body is transferred in association with the macro body. 'Force-applying body' expends additional work and 'force-receiving body' receives same additional work. In case of basic 3D matter-particles, work is done by 2D energy-fields within themselves to create and sustain basic 3D matter-particles. Energy is the resulting stress in surrounding universal medium and in its constituent quanta of matter, associated with basic 3D matter-particles. During compression stage of a disturbance, gravitational action does work and related energy is stored in the form of displacements and reduction in length of quanta of matter, both within and outside the disturbance. Quanta of matter are held at shortened length against their natural tendency to expand in their own single spatial dimension. This, in turn, produces stress within quanta of matter and latticework-structure formed by them. Stress in shortened quanta of matter of a disturbance is 'energy stored' within a disturbance as pressure energy. Certain energy is stored in 2D energy-field around a disturbance, as stress produced due to its distortions.

When a 2D disturbance has reached its highest matter-density and compression of disturbance in 2D spatial system is completed, gravitational effort cannot act on it any more (unless, there is an imbalance between external and internal pressures or loss of matter-content from its plane). Hence, work, which was being done to compress the disturbance, is stopped. No more additional work can be transferred into or about the disturbance and magnitude of energy stored in and about the disturbance in the form of pressure energy or stress due to displacements of quanta of matter remain steady.

Energy, already stored in and about a 2D disturbance, remains with it as long as its matter-density (internal pressure) remains steady. When gravitational effort is able to produce an inertial movement of disturbance, additional work, done during its change of state of motion is stored about the disturbance in the form of distortions in latticework-structure of 2D energy-fields in its immediate neighborhood. Stress, produced by moving distortions in a 2D energy-field, is kinetic energy associated with a moving disturbance. During motion of a disturbance, part of gravitational effort, producing inertial movement, acts as an inertial effort. In all these cases, gravitational effort, which is derived from inherent property of 2D energy-field, to maintain its continuity and stability, provides basis for all types of 'natural forces' and 'energies'.

3.2.4. Gravitation on a straight perimeter:

Let us consider a 2D disturbance at its highest matter-density and has part of its perimeter as a straight line. In case of a 3D disturbance, this is analogous to partially flat surface. A disturbance reaches its highest matter-density, when all its constituent quanta of matter are fully converted into present (2D or 3D) spatial dimensional system. In this

state, neighboring quanta of matter fit close with each other and there are no gaps between their matter-contents. Highest matter-density of any disturbance is the same as matter-density of a quantum of matter in its free state. Variations (reductions) in matter-density of a disturbance occur due to presence of gaps between constituent quanta of matter in its spatial dimension.

Since disturbance has reached highest matter-density, (though gravitational effort is continuously applied) gravitational effort from 2D energy-field is no more active on it. 2D energy-field and the disturbance are in stable equilibrium state. Matter-content of disturbance is spread evenly throughout its body (area of its plane, in case of 2D disturbance and volumetric space, in case of 3D disturbance). 2D energy-field(s) all around the disturbance is distorted to apply essential gravitation to sustain required internal pressure of the disturbance.

Consider part of latticework-structure of a 2D energy-field, in contact with a straight-line perimeter of a disturbance, as shown in figure 3.2. Arrows in grey lines (perpendicular to each other) represent quanta of matter in latticework-structure of 2D energy-field, through which gravitational effort is applied. Part of figure below dashed horizontal line shows part of a disturbance. Thick dashed horizontal straight line shows part of perimeter of a 2D disturbance. Arrows in thin dashed lines show resolved components of gravitational efforts applied through quanta of matter.

Presence of disturbance causes discontinuity in 2D energy-field. Because of discontinuity, 2D energy-field applies gravitational effort onto disturbance's perimeter. Arrowheads of quanta of matter show direction of gravitational effort through them. Because of straightness of perimeter (shown by dashed straight line) of disturbance, junction-points of 2D energy-field, in contact with disturbance at this part of its perimeter are placed in a straight line and all related latticework-squares of 2D energy-field are in neutral and stable condition. For a gravitational effort, to act on the disturbance, relative axial movements of quanta of matter in latticework-structure of 2D energy-field are required.

From figure 3.2, it can be seen that gravitational efforts by 2D energy-field, are along quanta-chains in them. Directions of all gravitational efforts are at 45° to straight perimeter of disturbance. Each of these efforts may be considered to have two resolved components, shown by arrows in thin dashed lines. Components, perpendicular to straight perimeter of disturbance add up and together they apply parts of gravitational efforts directly into disturbance. An opposite reaction from internal pressure of disturbance balances this part of gravitational effort. Vertical components of all gravitational efforts through quanta of matter efforts are equal and unidirectional. Hence, compression on periphery of disturbance is uniform and even. Uniform internal pressure of disturbance balances these components. As long as internal pressure (matter-density)

remains steady at highest value, gravitation and its opposing reaction remain in stable equilibrium.

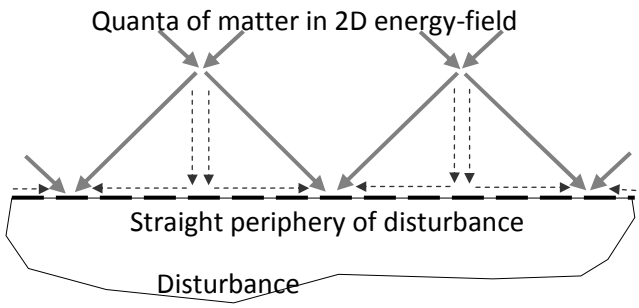

Figure 3.2

Horizontal components of gravitational efforts along quanta of matter (shown by horizontal arrows in thin dashed lines) are parallel to straight section of perimeter of disturbance. They, being in opposite directions, neutralize each other. This prevents relative motion between quanta of matter in latticework-structure of 2D energy-field. Consequently, as long as internal pressure balances vertical components of gravitational efforts, applied into the disturbance, there will be no resultant gravitational effort on disturbance, at this perimeter section. Results are same for different relative directions of latticework-squares with straight-line perimeter of disturbance.

If matter-density of disturbance is now lowered, internal pressure of disturbance decreases. Balance of vertical components of gravitational efforts at straight perimeter of disturbance are offset. Quanta of matter in latticework-structure of 2D energy-field are permitted to move towards the disturbance. Their motion is able to increase compression on disturbance. Thus, gravitational effort is able to act on disturbance. Motion of quanta of matter towards the disturbance tends to increase its internal pressure.

However, if matter-density of disturbance can be maintained constant at highest level, by some means at straight perimeter of disturbance; under any condition quanta of matter of latticework-structure of 2D energy-field, they cannot move towards the disturbance to act on it. At a straight perimeter of a disturbance, gravitational effort by 2D energy-field is balanced by equal and opposite reactive effort by internal pressure. This is true even if the gravitational effort on opposite side of disturbance is totally absent.

These are the only instances when a matter-particle (disturbance) does not invoke gravitational effort. There is no action by gravitational effort on a straight perimeter (a flat surface in case of basic 3D matter-particle) of a 2D matter-body.

Should the perimeter section of a disturbance is at an oblique angle to line joining junction-points of a stable 2D energy-field, latticework-squares in 2D energy-field distort themselves so that their junction-points are in contact with perimeter-section. Wherever such contact cannot be established, junction-points stay away from straight line and disturbance's perimeter extends towards junction-point to make contact. Thus, perimeter section will no more be a straight line with respect to 2D energy-field.

When we say that 2D energy-field is applying an effort on a disturbance, contacts between 2D energy-field and perimeter of the disturbance are at junction-points of quanta of matter in latticework-structure of 2D energy-field. 2D energy-field can apply effort only through its junction-points. Junction-points of a 2D energy-field come to rest on perimeter/surface of a disturbance and apply efforts directly on to matter-content of disturbance, formed by quanta of matter.

3.2.5. Gravitation on curved perimeter:

Consider perimeter-section of a disturbance as shown in figure 3.3. It has a convex curvature. Arrows in bold grey lines, forming rectangles, represent quanta of matter in latticework-structure of 2D energy-field, through which gravitational efforts are applied.

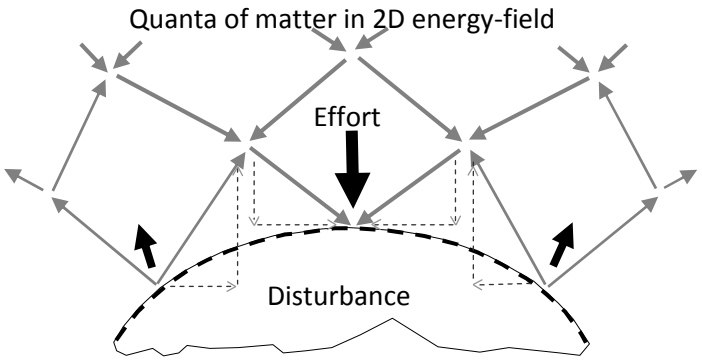

Figure 3.3

Part, below dashed curved line, shows part of a disturbance with curved perimeter. Arrows in dashed thin lines show resolved components of gravitational efforts through constituent quanta of matter of latticework-structure. As can be seen from the figure, in stable equilibrium condition, latticework-squares are not at their neutral states. They are strained. Quanta of matter of latticework-square in latticework-structure of 2D energy-field, shown in the middle are compressed and latticework-square is deformed towards the disturbance. Quanta of matter of latticework-squares on either side of middle point are in tensile states.

Horizontal components of gravitational efforts along quanta of matter (shown by thin horizontal arrows in dashed lines) are parallel to each other. They, being equal in

magnitude and in opposite directions, neutralize each other. This prevents relative motion between quanta of matter in latticework-structure of 2D energy-field. There is no resultant lateral effort on disturbance.

Magnitudes of vertical components of gravitation along quanta of matter (shown by thin vertical arrows in dashed lines) are not equal. Depending on state of quanta of matter (tensile or compressive) in 2D energy-field, additional push-efforts are applied towards disturbance or magnitudes of push-efforts towards disturbance are reduced. Efforts of different magnitudes, applied through various quanta of matter, produce different resultant vertical efforts at their junction-points. Internal pressure of disturbance may be considered as uniform. Hence, variations in applied efforts produce different results at various junction-points of quanta of matter.

A symmetrically curved convex perimeter section is shown in figure. Resultant efforts from latticework-squares provide additional pressure at middle point of disturbance's perimeter as shown by thick arrow. Reductions in compression at junctions of quanta of matter, away from middle point, are represented by thick arrows in opposite directions. Resulting actions , in the case, are as shown in figure; middle point of disturbance's curved perimeter is pushed downwards by additional gravitational effort from 2D energy-field and outer sides of disturbance's curved perimeter are pushed outwards (apparently pulled upwards) by internal pressure of disturbance.

Hence, there is additional gravitational effort on certain part of curved perimeter section of disturbance towards middle of its convex curvature. This additional effort on disturbance's perimeter is over and above normal gravitational effort, which was balanced by internal pressure of disturbance. Similarly, at certain other parts of disturbance's curved perimeter there is a reduction in magnitude of gravitational effort (towards middle of concave curvature) For all practical purposes, reduction of gravitational effort affects the disturbance like a pull-effort from outside, while additional gravitation acts as a push-effort from outside. Addition and reduction of efforts are created by variations in geometrical shape of disturbance's perimeter. Results are same for different relative directions of latticework-squares with curved perimeter of disturbance.

Let us consider a disturbance with uniform convex curvature of its perimeter. Every point on its perimeter is under additional gravitational effort from surrounding latticework-structure of 2D energy-field. Since matter-content of disturbance is already at its highest matter-density, uneven magnitudes of additional gravitational efforts at different points on its periphery can produce linear motion of whole disturbance or its part. As long as equal and opposite effort is applied on opposite side of disturbance, additional effort at a point on its perimeter is neutralized and the disturbance maintains a static state, without linear displacement in universal medium.

For a disturbance of uniform internal pressure (matter-density), action of additional gravitational effort (due to convex curvature of its perimeter) depends on similar effort being applied on opposite side in same plane. Magnitude of inertial motion, imparted to a disturbance with convex curved perimeter, solely depends on balance between additional gravitational efforts on its opposite sides. Inertial motion, imparted by gravitation, to a stable disturbance with different curvatures on opposite sides is in a direction from higher convex side to lesser convex side. Thus, a stable disturbance with different curvatures on opposite sides remains always under inertial motion, irrespective of its state of compression.

In nature, it is rare for a stable disturbance to have a concave perimeter. Actions of gravitational efforts on concave perimeter-section is similar but in opposite direction to that described above. Gravitational efforts have tendency to straighten out curved perimeter-sections of a disturbance. There are many 2D energy-fields in contact with a flat surface of a 3D disturbance. Not all of them are perpendicular to its surface. In those 2D energy-fields, which are at oblique angle to surface, there are only few junction-points, which are in contact with surface of disturbance. All others stay at a distance from surface of disturbance and are under action of reactive efforts from quanta of matter of their neighboring latticework-squares. Therefore, magnitudes of gravitational efforts by any of such 2D energy-field are little and can be neglected.

In nature, all basic 3D matter-particles are disc shaped, with (almost) flat faces. These disturbances have (almost) flat perimeter at their faces and curved perimeter at their circumferences. Their matter-density is maintained at highest level. Therefore, gravitational effort can act on them only in planes containing their circumference. Gravitational effort is unable to act on them in any other plane passing through their disc-faces, as long as matter-density is maintained at critical level. Gravitational efforts are able to act on their disc-faces only when changes in internal pressure vary curvature of their flat faces. This action helps to maintain basic 3D matter-particle's shape and matter-density. This phenomenon is not applicable to composite macro bodies.

If matter-density of a disturbance is kept constant at highest level, in 2D/3D spatial system, gravitational effort cannot act on straight perimeter (flat surface in 3D disturbance) of a disturbance. Magnitude of gravitational effort on a disturbance by 2D energy-field depends (also) on magnitude of convex curvature of its perimeter. Let this relationship be represented by a term K_2. Equation (2/1) for gravitational effort, GF, at a point on perimeter of a disturbance has to be modified accordingly and becomes:

$$GF = \frac{G_1 K_2}{2\pi} \times \frac{1}{d} \qquad \textbf{(3/2)}$$

In nature, we come across only macro bodies, which are made of numerous basic 3D matter-particles. Circumferential curvatures (radial size) of all basic 3D matter-particles, in

their stable states, are identical. Hence, constant of proportion, K_2, in equation (3/2) is of little interest. We need not consider it separately. It merges with gravitational constant G_1.

As discussed above, for gravitational effort to act on a disturbance, it is necessary for quanta of matter in latticework-structure of 2D energy-field to move in relation to each other and towards the disturbance. This is true in cases of all field-efforts. Should a disturbance itself is moving at certain speed in same direction; effect of a field-effort, in the direction of motion of disturbance, is correspondingly reduced. In order to have same amount of additional work, done about a moving disturbance, quanta of matter, applying the (gravitational) effort need to move faster.

In other words, to have same magnitude of effect (in terms of change in state of motion) on a moving disturbance, as that on a static disturbance, a greater (gravitational) effort has to be applied on the moving disturbance. This phenomenon, giving rise to relativistic mass (increase in mass of a matter-body in proportion to its linear speed), is discussed in detail later. (See section 5.2.5). It can be stated here that magnitude of (gravitational) effort, acting on a moving disturbance in the direction of its motion, depends also on the linear speed of disturbance. If linear speed of disturbance approaches speed of light, external (gravitational) effort, in the direction of its motion, is unable to act on it. Inability of external effort to act on a disturbance is currently assigned to increase in its mass (an assumed increase in matter-content of disturbance) to infinity.

3.3. Gravitation on a disturbance:

A 2D energy-field, by its inherent nature, applies gravitation in its plane, all around a disturbance. Gravitational efforts are directed away from the part of 2D energy-field that is applying the effort. They are directed into disturbance (towards centre of curvature of its perimeter) from all directions, within angle subtended by that part of 2D energy-field. Gravitational effort along any line is such as to move a disturbance away from the extent of 2D energy-field, applying gravitational effort. Application of gravitation by a 2D energy-field is limited to its plane. In cases of a basic 3D matter-particle, 2D energy-field in each plane applies gravitation in its own plane and all 2D energy-fields passing through volumetric space of basic 3D matter-particle, together, apply gravitation on it.

3.3.1. Shaping a disturbance:

In a 2D disturbance, as shown in figure 3.4, let AA_1, BB_1 and CC_1 be three chords of equal lengths, cutting its perimeter segments at different locations. Magnitude of gravitational effort at any of these segments of perimeter, is proportional to exposure, it has to latticework-structure of 2D energy-field. Exposures are in turn, proportional to angle subtended by segments to latticework-structure of 2D energy-field, as shown by double-headed curved grey arrows in dashed lines. It can be seen that segment of

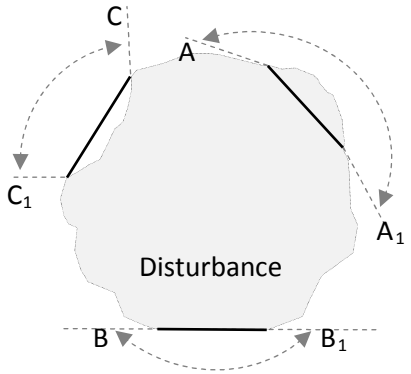

Figure 3.4

latticework-structure in contact with perimeter segment BB_1 is wider than segment of latticework-structure in contact with perimeter segment CC_1 and narrower than segment of latticework-structure in contact with perimeter segment AA_1.

Gravitational efforts on every point in one of these perimeter segments are a fraction of total gravitation on whole perimeter of the disturbance. Total gravitation on a perimeter-segment, is proportional to the extent of latticework-structure of 2D energy-field that is in contact with it. Extent of latticework-structure is partly determined by angle subtended by chord across any part of disturbance's perimeter. Another factor that determines magnitude of gravitational effort is magnitude of curvature of perimeter.

Gravitational efforts govern inward displacements of perimeter segments of disturbance. Magnitude of gravitational effort at perimeter section AA_1, is more than gravitational effort at perimeter section BB_1, which is more than the gravitational effort at perimeter section CC_1. Differences in magnitudes of additional gravitational efforts, over and above compression of disturbance by 2D energy-field, compel the disturbance to assume a circular shape, in its plane. Action of reshaping stops when disturbance becomes circular and gravitational efforts on all points on its perimeter are equal.

Thereafter, gravitational efforts act to compress the disturbance to smaller size, until all constituent quanta of matter in it are closely packed (without vacant gaps between them in their plane) and matter-density of disturbance equals matter-density of a quantum of matter. Once matter-density of a disturbance reaches highest possible value (equal to matter-density of a quantum of matter), gravitational pressure applied at its perimeter maintains steady state of disturbance.

Gravitational effort, on any part of perimeter of a disturbance, depends also on the curvature of perimeter segment. As it can be seen from figure 3.4, a convex perimeter segment has a larger segment of latticework-structure of 2D energy-field in contact with it and a concave perimeter segment has a smaller segment of latticework-structure of 2D energy-field in contact with it. A larger segment of latticework-structure has greater extent and a smaller segment has lesser extent of 2D energy-field. Therefore, periphery of a disturbance with convex curvature has higher magnitude of gravitational effort on it than segment of its periphery with concave curvature. Greater convex curvature of periphery of a disturbance produces higher magnitude of gravitational effort and higher

concave curvature causes greater reduction in magnitude of gravitational effort on that part of periphery of a disturbance.

Asymmetry in magnitudes of gravitational efforts, around perimeter of a disturbance, due to unevenness of its perimeter during its formation, may also impart linear motion to it, in its plane. This happens only when resultant linear effort is strong enough to part junction-points in latticework-structure of 2D energy-field, to pave way for disturbance's relative displacement through it.

Similar actions, by the gravitational efforts, take place on a free basic 3D matter-particle in 3D space also. 2D energy-fields in every plane, passing through a basic 3D matter-particle act on its matter-content, each 2D energy-field in its own plane. Gravitational efforts acting on basic 3D matter-particle try to shape it into circular shape in every plane. Actions in all planes together tend to make a free (static) basic 3D matter-particle (not a macro body) in 3D space, into a sphere.

3.3.2. Size reduction of disturbance:

By its inherent nature, a 2D energy-field reduces size of a disturbance in it, to minimum. To achieve this, 2D energy-field applies inward-acting gravitational pressure all around the disturbance in its plane. Normally, there are very few quanta of matter in a gap formed in 2D energy-field compared to space available and they are independent of each other. Concentration of quanta of matter within the gap is very low. Because of expanding nature of quanta of matter, (apparent) attraction between their ends and (apparent) repulsion between their bodies (when their ends are in contact), quanta of matter tend to spread out in an effort to re-form and become part of latticework-structure of their parent 2D energy-field and to fill the gap. Process of re-formation of latticework-structure takes some time. Before formation of latticework-structure in the gap is completed, latticework-structure of 2D energy-field closes-in from all around, to reduce space available in the gap.

Gravitational pressure by 2D energy-field gathers loose quanta of matter (within the gap) together and opposes their expanding tendency by compressing them to form a disturbance. Free quanta of matter within the gap (in the plane of 2D energy-field), as a group, forms a proto-disturbance. Once size reduction of proto-disturbance starts, due to lack of space in the gap, quanta of matter in it will not be able to re-form latticework-structure and become part of parent 2D energy-field. Gravitational pressure compresses proto-disturbance to reduce its (radial) size. Latticework-structure of 2D energy-field acts like a stretched skin around the disturbance. Thus, gravitational pressure provides adhesion around the disturbance, akin to surface tension in 3D macro bodies.

As quanta of matter in the disturbance are squeezed nearer to each other, disturbance's internal pressure increases. Internal pressure and its matter-density reach

highest value, when all its constituent quanta of matter are in contact with each other, without gaps between them. Gravitational pressure on disturbance, from all around, makes it possible for disturbance to exist as a single composite 2D matter-body against expanding (spreading-out) tendency of its constituent quanta of matter. Gravitational pressure maintains integrity of disturbance as a single 2D matter-body.

When quanta of matter are free, within a gap in 2D energy-field, they tend to increase their length. Distance between adjacent junction-points in 2D energy-field, trying to hold a free quantum of matter within a gap in it, are less than the length of a free quantum of matter within the gap. As disturbance is reduced in size, sizes of free quanta of matter within the gap also reduce. Reduction in size of gap compels latticework-structure of 2D energy-field to collapse around the shrinking disturbance.

As latticework-structure collapses, in proportion to reduction in size of a disturbance, distance between adjacent junction-points in latticework-structure of 2D energy-field (at the perimeter of disturbance) is always maintained much smaller than length of a constituent quantum of matter in disturbance. Junction-points in latticework-structure of 2D energy-field, surrounding the disturbance, come very close so as to prevent free quanta of matter escaping from disturbance.

Due to very small size of a disturbance, its perimeter has very high convex curvature. To attain balance of pressures, at its perimeter, a disturbance has to have higher internal pressure compared to external gravitational pressure on its periphery. Pressure difference needed for balance increases as size of disturbance reduces in radial size. Therefore, rate of reduction of disturbance's radial size increases as its size becomes smaller, until it is countered by 'jamming' (see next subsection) of squares in latticework-structure of 2D energy-field.

3.3.3. Contraction of small disturbance:

If a disturbance is too small (having very few quanta of matter in it), it may not be able to provide sufficient internal pressure to balance external gravitational pressure by surrounding 2D energy-field, at any stage of its compression. Consequently, disturbance would shrink to very small area, approaching zero value. Such eventuality is avoided by in-built safety feature of latticework-structure of 2D energy-field.

In normal cases, deformation in latticework-structure of a 2D energy-field spreads out and its strain is absorbed into wider area of latticework-structure. If size of gap in 2D energy-field, containing a disturbance is very small, latticework-squares closing-in onto very small disturbance, jam (wedge) together to form self-regulating gravitational-field about the disturbance, as shown in figure 3.5. Adjacent junction-points in latticework-structure of 2D energy-field approach each other too close so that further approach is not possible. Figure 3.6 shows slightly more detail of deformation in a larger area of

gravitational-field in 2D energy-field around a very small disturbance. Reactions from junction-points in latticework-structure prevent its constituent quanta of matter from coming too close to each other.

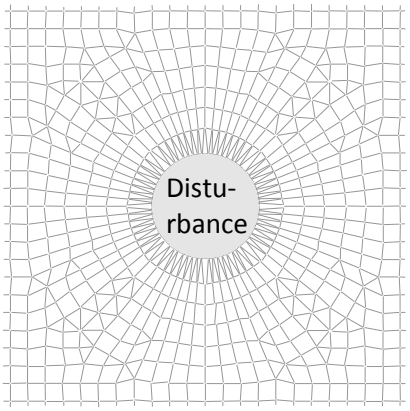

Figure 3.5

Deformation of latticework-structure of 2D energy-field, around a disturbance is work-done about the disturbance. Certain work is also stored in quanta of matter in the form of changes in their spatial dimensions. These are work-done about the disturbance, by gravitational pressure from 2D energy-field. Work about a very small disturbance become saturated, when reaction due to jamming of latticework-structure prevent further work (movements of quanta-chains towards) about the disturbance.

In this condition, latticework-structure cannot distribute its deformation and hence is it unable to reduce size of the gap containing the disturbance, further. Latticework-structure of 2D energy-field reaches equilibrium state and it will continue to stay in that jammed state around the small disturbance. This phenomenon may be called 'jamming effect'. Most of the latticework-squares around disturbance change their shapes to become triangles with their apex in contact with (matter-content of) the disturbance. Matter-density, within the disturbance, remains lower level than maximum value in 2D spatial system.

As gap in 2D energy-field becomes smaller, distortions in gravitational-field (2D energy-field around disturbance) increase, as shown in the figures 3.5 and 3.6. Increase in distortions produces higher stress in latticework-structure of 2D energy-field. Distortions in 2D energy-field can be increased only by overcoming stress present in it. As contraction of disturbance proceeds and gap in 2D energy-field becomes smaller, gravitational pressure has to act against increasing stress in latticework-structure of 2D energy-field. Hence, efficiency of gravitational pressure on disturbance reduces as size of disturbance becomes smaller. Magnitude of internal pressure of disturbance, required to balance external gravitational pressure, diminishes.

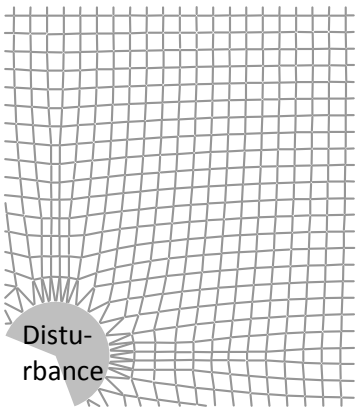

Figure 3.6

At the same time, as size of a disturbance becomes smaller, excess internal pressure required to balance external gravitational pressure at its periphery, due to increase in convex curvature, increases. Since quanta of matter, contained in the disturbance, are few and 2D energy-field cannot reduce the gap any further, disturbance within the gap continues to remain as a 2D disturbance of low matter-density. Its equilibrium state is the result of inability of latticework-structure of 2D energy-field to close-in any further, rather than due to balance between internal and external pressures.

Matter-density of quantum of matter is constant. Matter-density of a 2D disturbance is total matter-content in its spatial plane divided by its area. Since disturbance is not contracted fully, there are vacant spaces between its constituent quanta of matter in its plane. Vacant spaces between its constituent quanta of matter reduce matter-density of disturbance, in its plane. [Vacant spaces between quanta of matter in disturbance are occupied by 2D energy-fields in other planes]. Such unsaturated disturbances remain as 2D objects. They may merge with other disturbances in the same plane under action of (apparent) attraction due to gravitation. They are circular in shape and may develop linear motion within their plane under action of external efforts.

3.4. Apparent attraction:

By its inherent property, a 2D energy-field tends to reduce total disturbance in it, to minimum. One way to do this is by compressing disturbances in its plane to their minimum radial sizes and to make them circular in shape. As size of a disturbance reduces in size and its shape becomes circular, its perimeter, which is magnitude of disturbance, also reduces. For any given area, circular perimeter of a disturbance is least.

It was seen in section 3.2 that immediately on forming a disturbance; its shape is made circular by action of gravitational pressure from 2D energy-fields. Perimeter of a larger circle is lesser than sum total of perimeters of smaller circles whose combined area is equal to area of larger circle. Consequently, another way to reduce total disturbance in a 2D energy-field is, for it to combine disturbances in it, to make a larger but single disturbance. This is achieved as follows:

When a disturbance is by itself, in a 2D energy-field, gravitational effort is applied on it from all around, such as to confine it in shape and size. Magnitudes of gravitational efforts, on a disturbance in free space, from all directions in a plane are equal. This is because extent of 2D energy-field in any direction, from a single disturbance in free space, is infinite. When there are more than one disturbance in same 2D energy-field-plane, extent of 2D energy-field between them is equal to distance between them.

Magnitudes of gravitational efforts by this small extent of 2D energy-field on both disturbances are lesser than gravitational effort on them by infinite extent of 2D energy-field on their outer sides (sides away from each other). Therefore, when two disturbances

are present in a plane, gravitational efforts on them from in between disturbances is always less than gravitational efforts on them from their outer sides. Differences in magnitudes of gravitational efforts on disturbances form resultants.

Gravitational efforts are of push nature. Greater gravitational efforts from outer sides push against smaller gravitational efforts from between the disturbances. Differences in magnitudes of gravitational efforts move two disturbances towards each other. Each of the disturbances moves independently of the other, by action of separate resultant effort on it. However, presence of at least two disturbances, in same plane, is essential to create this phenomenon. Disturbances do not affect each other but actions are between each disturbance and surrounding 2D energy-field. Gravitational efforts are 2D spatial phenomena. Hence, in order to invoke this phenomenon, both disturbances have to be present in the same 2D energy-field.

[In practice, 3D matter-particles are observable and 2D energy-fields remain hidden from us, the 3D beings. Hence, similar and simultaneous actions on different 3D matter-bodies, in 2D spatial systems, appear to us as if it is due to mysterious mutual influences between 3D disturbances (3D matter-particles). While, 3D matter-bodies are actually pushed towards each other, separately in all planes of their existence, they appear as pulling each other].

Simultaneous tendencies of both disturbances, to move towards each other, produce illusion that they are (mysteriously) attracting each other. Hence, this action is erroneously called 'attraction due to gravitation' between disturbances. Attraction due to gravitation causes inertial motions of two disturbances towards each other under an apparent (attractive) effort, attributed to gravitation.

In reality, there is no effort or action between disturbances. Each disturbance is acted upon separately by surrounding 2D energy-field. Although it is a misnomer, to conform with current convention, we may call this apparent effort as 'gravitational attraction'. Gravitational attraction is relatively a minor by-product of gravitational actions. Gravitational efforts mainly act to create and sustain disturbances, 3D matter-particles and superior macro bodies in higher spatial dimensional systems.

Magnitude of gravitational attraction between two disturbances depends on gravitational efforts on each of the disturbances (which depend on their sizes, curvature of perimeter and angle subtended between them) and distance between them. Distance between disturbances comes into play as a measure of extent of 2D energy-field separating them. Increase in distance between two disturbances increases extent of 2D energy-field (universal medium) between them with corresponding increase in gravitational actions, on disturbances from the space between them. Increased gravitational effort from between the disturbances reduces resultant gravitational actions on both disturbances in straight-line direction joining them.

Magnitude of gravitational attraction on larger disturbance is greater than magnitude of gravitational attraction on a smaller disturbance. Larger disturbance has larger contact perimeter and smaller disturbance has smaller contact perimeter with 2D energy-field(s). Magnitude of gravitational action is proportional to magnitude of perimeter of disturbance.

While considering gravitational attraction, higher push effort is applied on larger disturbance towards smaller disturbance and smaller push effort is applied on smaller disturbance towards larger disturbance. In case of macro bodies, this difference is not noticed for different reasons, as explained later in this book. Since 2D energy-field applies gravitation directly onto disturbances, gravitational attraction does not require any other medium of transmission or a carrier. In fact, gravitational attraction is an apparent manifestation of effect of gravitation on each disturbance, separately, by 2D energy-field(s).

In the case of gravitational attraction, there is no 'force' transmitted from one disturbance to another, but each disturbance is acted upon separately by 2D energy-field to move towards the other and thereby produce a combined (apparent) effect of disturbances being pulled towards each other. It is the differences in magnitudes and directions of gravitational efforts (on them), what pushes them towards each other. There are no direct interactions between participating disturbances. Neither imaginary particles nor 'actions at a distance' are required to produce gravitational attraction between two disturbances.

Gravitation acts continuously and separately on different disturbances to cause apparent attraction between them. Hence, gravitational attraction between two disturbances is modified instantly on changes of parameters of any one or both disturbances. This instantaneous modification of gravitational attraction takes place at any distance between them, however large it may be. Hence, supposition of a gravitational-field around a body (unless it means 2D energy-fields) or virtual particles like gravitons (that may travel faster than light) are not necessary to explain phenomenon of gravitational attraction, which is subject to instantaneous modification, between disturbances in nature.

Gravitational attraction between two disturbances tends to move them towards each other. If magnitude of gravitational attraction is small, disturbances will move towards each other until magnitude of reaction from latticework-structure (in between them) of 2D energy-field balances action by gravitational attraction. Thereafter, very small disturbances may maintain their distance from each other.

In case, magnitude of gravitational attraction is strong enough to move disturbances by parting latticework-structure of 2D energy-field, they move towards each other until they may make contact and merge to form a single disturbance of larger size. As and

when such movements take place, work is done to displace quanta of matter in latticework-structure and energy is developed in strained latticework-structure of 2D energy-field. Until displacements of quanta of matter in 2D energy-field are permitted, such work could not be accomplished.

During motion of a disturbance, introduced by gravitational attraction, disturbance (its matter-content) does not undergo any change. Work, created by 2D energy-field in producing motion, remains within latticework-structure of 2D energy-field, about the disturbances, and continues to produce disturbances' motion at constant rate. We may say that work expended by gravitational effort is now stored in association with both disturbances (in latticework-structure of 2D energy-field), to provide their linear motion and appear as kinetic energy. As work (distortions in latticework-structure) transfers itself in 2D energy-field, it carries disturbance, along with it.

Work remains in association with disturbances in an intangible form (because, we cannot measure movements or displacements of quanta of matter in latticework-structure of 2D energy-field) as distortions to its latticework-squares, immediately outside perimeters of disturbances in universal medium. Gravitational attraction between two (2D) points in a 2D energy-field is limited within the plane containing both points. If 2D disturbances are in different planes, there is no gravitational attraction between them.

3.4.1. Gravitational attraction in 2D space:

Let 'A', 'B' and 'C' be three points in a straight line in plane of a 2D energy-field, as shown in figure 3.7. A and B are two circular 2D point-disturbances of unit measure each, in same plane.

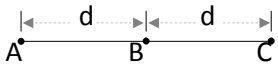

Figure 3.7

Distance: AB = BC = d.

Consider gravitational effort on point-disturbance B along lines AB and CB. Gravitational effort on point-disturbance B along line CB, by 2D energy-field of infinite extent is equal to highest value, represented by gravitational constant G_1. If there were no other disturbances in the same plane, an effort of equal magnitude would be acting on point-disturbance B along line AB as well. Gravitational effort on a point-disturbance is applied from all around the point. However, due to the presence of another disturbance at point A, extent of 2D energy-field along line BA is limited up to point A. Consequently, gravitational effort on point-disturbance B along line AB is produced by latticework-structure of 2D energy-field whose extent is from point-disturbance B to point-disturbance A only.

Gravitational effort, on point-disturbance B by extent of 2D energy-field from point B to point C, is equal but in opposition to gravitational effort, on point-disturbance B by extent of 2D energy-field from point B to point A. Therefore, it can be considered that

they neutralize each other. They can only compress disturbance at point B. (While considering gravitational attraction, we are interested only in linear inertial actions on disturbances to move them towards each other. Hence, compression of disturbance by gravitational efforts is ignored). Resultant magnitude of gravitational effort, on point-disturbance B along line CB, is equal to magnitude of gravitational effort on it by 2D energy-field beyond point C, onto right. Since we are considering (circular) point-disturbances, we may neglect other factors like angle subtended, curvature of perimeter, etc.

Magnitude of gravitational effort on point 'B' through point 'C',

$$F = \frac{G_1}{2\pi} \times \frac{1}{d} \qquad \text{by equation (3/1)}$$

A similar gravitational effort is applied on point-disturbance A also. Hence, sum of magnitudes of gravitational effort on both these disturbances (to move them towards each other) is the magnitude of gravitational attraction between them.

Magnitude of gravitational attraction between point-disturbances A and B,

$$F = 2 \times \frac{G_1}{2\pi} \times \frac{1}{d} = \frac{G_1}{\pi d} \qquad \textbf{(3/3)}$$

Let these disturbances are of larger sizes. (Apparent) gravitational interaction between large 2D disturbances takes place between every point (of unit measure) on their perimeters, within angle subtended by the disturbances on each other. Number of such points on each disturbance is proportional to its magnitude − larger disturbance having more number of points and smaller disturbance having lesser number of points on their circumferences. For the time being, we may neglect this relation and take their magnitudes to represent number of these points.

Length of perimeter is the magnitude of a disturbance in a plane. Let magnitudes of disturbances are m_1 and m_2, respectively. All points on perimeters of both disturbances are in direct contact with latticework-structure of 2D energy field. 2D energy-field applies gravitation on all points on their perimeters. This may be understood as interaction between 2D energy-field and points on perimeters of disturbances.

Each point on perimeter of one disturbance (apparently) interacts with each of the points on perimeter of second disturbance. Although, 2D energy-field acts on each disturbance separately, for simplicity of explanation we may consider that each part of a disturbance (apparently) interacts with every part of other disturbance, to produce gravitational attraction between them.

Magnitude of first disturbance = m_1

Magnitude of second disturbance = m_2

Total magnitude of disturbances, (apparently) interacting to produce gravitational attraction = $m_1 + m_2$

Every (peripheral) point in one disturbance interacts with every (peripheral) point in other disturbance. Total number of interactions is given by multiplication of magnitudes of disturbances.

Number of interactions = $m_1 \times m_2$

Multiplying equation (3/3) by number of interactions, we get the total gravitational attraction, F, between the disturbances,

$$F = \frac{G_1}{\pi d}(m_1 \times m_2) \qquad \textbf{(3/4)}$$

Part of this gravitational attraction, F, contributed by each of the disturbances, is proportional to its magnitude.

Magnitude of gravitational attraction on first disturbance,

$$F_1 = \frac{G_1}{\pi d}(m_1 \times m_2) \times \frac{m_1}{(m_1 \times m_2)} \qquad \textbf{(3/5)}$$

Magnitude of gravitational attraction on second disturbance,

$$F_2 = \frac{G_1}{\pi d}(m_1 \times m_2) \times \frac{m_2}{(m_1 \times m_2)} \qquad \textbf{(3/6)}$$

Greater part of gravitational attraction is the share of larger disturbance. Magnitude of a disturbance in a plane, being equal to its perimeter, larger disturbance has greater magnitude. This type of sharing of gravitational attraction can be considered only when we are considering one or few basic 3D particles in space. Sharing of gravitational attraction, in proportion to their matter-content, is not applicable to macro bodies. Even a very small macro body contains millions of basic 3D particles in different phase relations. At any instant, only very few of them contribute towards gravitational attraction between macro bodies.

When disturbances are larger than points, other factors affecting gravitation, on a disturbance, also should also be considered. Assigning constants of proportion (explained in last section) is of theoretical interest only. (See section 7.3).

[Usually, we consider total gravitational attraction between two macro bodies, as a single attractive effort between them. Gravitational attraction on each macro body due to presence of other macro body is never considered separately. In 3D world, all disturbances (basic 3D matter-particles) are almost of uniform size and shape. All macro-bodies are union of basic 3D matter-particles in various combinations. Gravitational

efforts are applied on constituent basic 3D particles of a macro body rather than to the composite macro body].

Inertial actions, due to gravitational attraction between two disturbances (matter-bodies), are termed 'attraction', because resultant action of gravitational efforts, acting separately on each of them, tends to move them towards each other. Gravitational effort has push effect on disturbances (matter-bodies) rather than a pull effect. There are no pull effects emanating from them during gravitational action. Gravitational efforts push each of the disturbances (matter-bodies) towards the other. There are no actions between disturbances (matter-bodies). Two disturbances (matter-bodies), moving towards each other under separate push-efforts on them, appear to be attracting each other.

3.4.2. Effect of angle subtended:

From equation (3/4), it is seen that magnitude of gravitational attraction between two disturbances in a plane is proportional to product of their matter-contents and inversely proportional to distance between their peripheries. All other variable factors, influencing magnitude of gravitational attraction are merged into gravitational constant, G_1. Distance between disturbances modifies magnitude of gravitational attraction between them, in two ways.

In the first instance, it alters extent of 2D energy-field between disturbances and varies resultant magnitude of gravitational effort, applied on each of them (as explained above). Reduction in extent of 2D energy-field reduces gravitational efforts from space between disturbances. Magnitudes of gravitation from outer sides of disturbances remain constant. Resultant of gravitational efforts from outer side and from between the disturbances, on each disturbance creates inertial actions on disturbances to move them towards each other. Magnitude of gravitational attraction between disturbances increases during reduction in distance between them.

In the second instance, variation in distance between two disturbances, vary angles subtended by them on each other. Change in angle subtended produces variation in extent of 2D energy-field, acting on each of the disturbances, in the direction of other. Variation in extent of 2D energy-field changes magnitudes of gravitational effort on both disturbances. As a result, magnitude of gravitational attraction between them varies.

In figure 3.8, 'A' and 'B' are two disturbances of similar sizes in a 2D energy-field. Extent of 2D energy-field on both disturbances, from the space between them, is represented by rectangle DEIH. This is much less than extent of 2D energy-field on them from outer sides. 2D energy-field of extent within sector CDEF acts on disturbance A towards disturbance B and 2D energy-field of extent within sector GHIJ acts on disturbance B towards disturbance A. As distance between disturbances is reduced, angle

subtended by them on each other increases. Higher subtended angle, in turn, increases area of 2D energy-field, applying gravitational effort on disturbances from outer sides, while sweep of 2D energy-field between disturbances, more or less, remains the same. Only its extent is varied due to change in distance between disturbances.

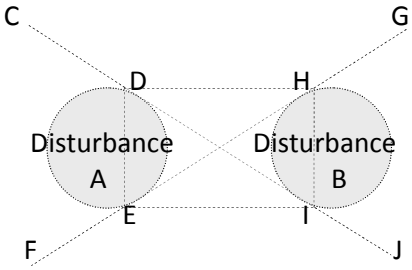

Figure 3.8

Let disturbances be of same size, as shown in figure. Then sweep of 2D energy-field between disturbances remains constant for any distance between them. Angle subtended on each other varies as distance between them is varied. Change in angle subtended produces a difference in extent of 2D energy-field in contact with perimeters of disturbances (towards other disturbance) on their outer sides. Change of extents of 2D energy-field varies magnitude of gravitation on each of them, towards the other. Change in magnitude of gravitation, on each disturbance, contributes to variation in magnitude of gravitational attraction between them. This variation is in addition to variation caused by changes in extent of 2D energy-field on either side of disturbances, due to change in distance between them.

In case of macro bodies, all basic 3D matter-particles are of same (radial) size and very small. Hence, variation of gravitational attraction by a change in angles subtended by them, on each other, is appreciable only at extremely small distance between them. In the equation, currently used for gravitational attraction, this phenomenon is not taken into consideration. It is one of the reasons, why current equation for magnitude of gravitational attraction (determined for larger 3D matter-bodies) breaks down for very small distances between macro bodies.

When gravitational attraction between more than two disturbances is considered, angle subtended makes considerable difference in the sum of magnitude of gravitational attraction between them. E.g., sum of magnitudes of gravitational attractions between a reference-disturbance and a twin-disturbance increases as constituents of twin-disturbance are moved across line of sight from reference disturbance. If twin-disturbance is a united entity (like an extended oblong macro body), gravitational attraction between reference disturbance and twin-disturbance vary as distance between constituents of the twin-disturbance changes, without varying distance between reference-disturbance and twin-disturbance. An increase in distance between constituents of twin-disturbance increases sum total gravitational attraction between reference-disturbance and twin disturbance. This increment is the result of increase in gravitational effort on reference disturbance, caused by increase in angle subtended by it on reference-disturbance.

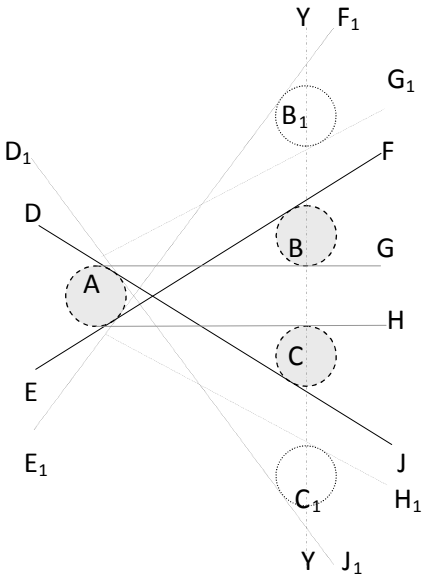

Figure 3.9

Figure 3.9 shows a main-disturbance 'A' and a twin-disturbance constituted by disturbances 'B' and 'C'. Distance between main-disturbance A and twin-disturbance is very large compared to distance between disturbances B and C. Extent of 2D energy-field, applying gravitational efforts, contributing to gravitational attraction between main-disturbance A and twin-disturbance, are: FBG on disturbance B, HCJ on disturbance C and DAE on disturbance A.

As long as distance between main-disturbance A and line YY (joining disturbances B and C) does not vary, angle subtended by each of constituent disturbances B or C, on twin-disturbance independently, on main-disturbance A remains steady. If disturbances B and C of twin-disturbance move apart to positions shown as B_1 and C_1, extent of 2D energy-field, applying gravitational efforts on them, contributing to gravitational attraction, remains constant. Angle $F_1B_1G_1$ is equal to angle FBG and angle $H_1C_1J_1$ is equal to angle HCJ. However, extent of 2D energy-field, applying gravitational effort on main-disturbance A, changes to D_1AE_1. Contribution of main-disturbance A towards gravitational attraction increases considerably, without any variations in parameters of disturbances or a change in distance between main-disturbance and twin-disturbance.

This phenomenon is applicable in case of composite macro bodies also. Magnitude of gravitational attraction between a main-body and a twin-body (composite macro body) increases as distance (perpendicular to line joining main-body and twin-body) between constituents of twin-body is increased within reasonable limit. Very large and excessively oblong spherical bodies may produce similar results in magnitude of its gravitational attraction, depending on relative position of its major axis, with respect to other macro bodies. Changes in magnitude of gravitational attraction are contribution of main-body, due to variation of extent of 2D energy-field, subtended on it.

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