

# Binary Stars

According to 'MATTER (Re-examined)'

Nainan K. Varghese, matterdoc@gmail.com

<https://www.matterdoc.in/>

## An alternative view:

An alternative concept, proposed in the book 'MATTER (Re-examined)', provides logical explanations on all physical phenomena on the basis of a single assumption. In the material world, the existence of matter is nearest to the absolute truth, and that is the only assumption required to explain all physical phenomena. Matter provides 'objective reality' and 'positive existence in space' to all real entities. Quanta of matter structure a universal medium that fills the entire space outside the most basic 3D matter-particles. As the universal medium is formed by matter, it is a real entity and is synonymous with the functional entity of 'space'. Quanta of matter and the universal medium (structured by them) remain in lower spatial systems, and hence they are not perceivable by the senses of 3D rational beings (or by the instruments designed for 3D objects). As the universal medium is in direct contact with all 3D matter-particles in the universe, there are no 'actions at a distance through empty space'. All actions on material objects and apparent interactions between them are performed by and through the universal medium.

Due to its structure, the universal medium is inherently under compression. A 3D matter-particle in the universal medium experiences this compression as an external pressure on it. This property of the universal medium is the 'gravitation'. The magnitude of gravitation corresponds to the extent of the universal medium that exerts the pressure. The extent of the universal medium between two 3D matter-particles is always less than the extents of the universal medium on their outer sides. Hence, higher gravitational pressures on their outer sides tend to move the 3D matter-particles towards each other. This tendency is understood as the 'gravitational attraction' or 'gravity'. Gravitational attraction is the resultant (relatively a minor by-product) of separate gravitational actions on two 3D matter-particles by the universal medium. Gravitational pressure is enormously stronger compared to the gravitational attraction. 'Natural forces' are different manifestations of gravitation. Hence, there is only one type of physical effort in the universe, and that is of push nature only.

Structural distortions (strain) in the universal medium in and about a body are the 'work' associated with that body. Work is a real and tangible entity. Stress in the universal medium due to work-done is the energy associated with a body. Energy is a functional and intangible entity. As the imaginary energy can be conveniently used as the cause of an action with no logical or obvious cause, in contemporary physics it has usurped the rightful place of work.

The universal medium gathers freely available quanta of matter in it and compresses them to form the 3D matter-core of the most basic 3D matter-particle (a photon). A photon is a corpuscle of radiation (light) that has a segmented spherical (disc-shaped) 3D matter-core and associated structural distortions (EM waves) in the surrounding universal medium. 3D matter-core provides photons' particle nature, and the structural distortions in the surrounding universal medium provide photons' wave nature. The universal medium moves each photon at the highest possible (hence constant) linear speed and spins the photon's 3D matter-core about one of its diameters at a spin speed (frequency) proportional to its 3D matter-content. Gravitational actions by the universal medium assemble complementary high-frequency photons in various combinations to create (sustain and destroy) all other superior 3D matter-particles and macro bodies.

Electromagnetic repulsion between halos of neighbouring stable galaxies neutralises gravitational attraction between them to keep them floating in space without translation. Galaxies are cyclically destroyed, and new galaxies are formed in different regions of space. This concept advocates a steady state of the universe.

### **Binary star system:**

The existence of binary star (and multi-star) systems is a widely believed supposition. In binary systems, two stars (along with their accompanying macro bodies) are assumed to revolve in circular paths around their barycentre in space. In multi-star systems, more than two stars are assumed to orbit around a common barycentre. Stability of their paths is attributed to gravitational attraction between them and the centrifugal actions due to their curved (circular) paths. Each system is assumed to float independently in space without external help. External influences (like gravitational attraction between neighbouring bodies or collisions with external bodies) are ignored. Often their orbits may differ from the conventional elliptical shape to facilitate the assumption. Macro bodies (independently or in groups) floating freely in space are very illogical and contrary to physical realities. According to contemporary physics, dynamics of an isolated system (similar to a pair of binary stars) may be assumed to satisfy applicable physical laws for their relative movements. However, when they are considered as a system (or group), they cannot float in space without translation.

All macro-bodies in the universe (except stable galaxies but including member stars of binary systems) have translational motion in space at very high linear speeds. Mutual gravitational attraction between the macro bodies in space initiates and sustains their high linear speeds within respective galaxies. Their individualities and directions of their motion with respect to another body are sustained by balance between centrifugal actions due to their paths in space and mutual gravitational attraction towards the galactic centre and neighbouring bodies. In a binary system, should the gravitational attraction between the stars overwhelm other efforts, they will collide, and should the centrifugal actions (or actions due to external factors) overwhelm gravitational attraction, the stars would move away from each other to pursue independent paths of their own.

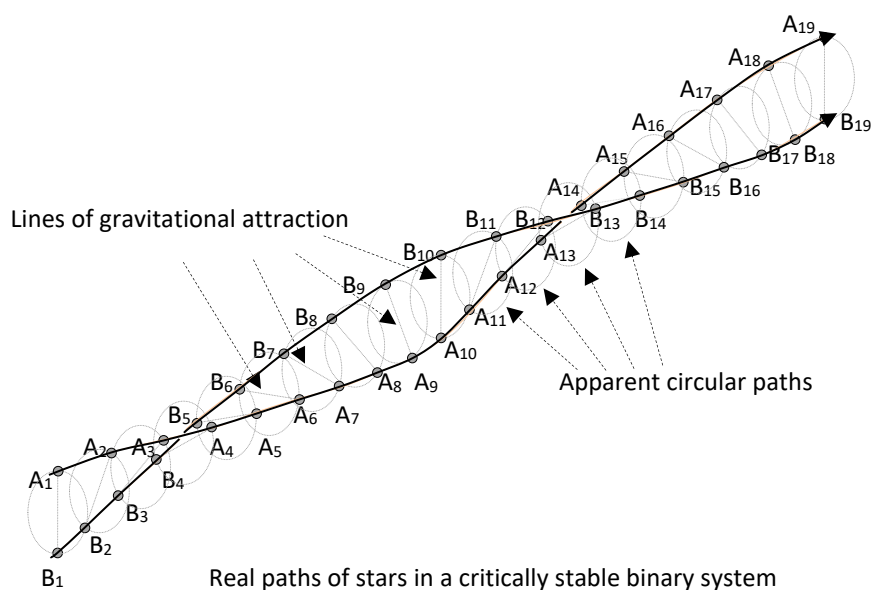
In reality, it is physically impossible for a free macro body to revolve around another moving body in any kind of geometrically closed path. [This can be clarified by observing a person trying to move around another person walking along a defined path]. Each body in space has its own independent linear path. The shape of this path may be influenced (to some extent) by external factors to alter its linearity. Within a stable galaxy, every macro body tends to move around the galactic center at great linear speed. Therefore, circular/elliptical paths of stars in a binary/multi-star system (and elliptical planetary orbits about their central bodies) are an untenable and physically impossible proposition. Yet, cosmological analyses in contemporary text books depend heavily on this impossible proposition. Proofs of a few other theories in physics are also partially based on this suggestion.

Since we have no absolute reference, paths of cosmic bodies are usually determined with respect to a stationary point (or another body assumed in a static state) in space. This relative consideration, which does not constitute real affairs, is suitable to predict cyclic (yearly) changes in the parameters of participating bodies. Assigning reality to these assumed relative paths of bodies in analyses of orbital movements would not produce authentic results. I think this is a fundamental flaw in contemporary cosmology.

### **Real paths of stars in a binary system:**

Two stars of equal 3D matter-contents (masses), moving in more or less parallel paths in the same direction but approaching each other under mutual gravitational attraction, may gradually change directions of their paths to spiral about a central path (as shown in the figure). They may appear as members of a binary star system for a short while. The figure shows the real paths of two stars, A and B, in a critically stable binary star system. Positions A1, A2, A3, A4, etc. of star A corresponds to positions B1, B2, B3, B4, etc. of star B. Bold curved lines with arrows show real paths of stars A and B.

Grey ellipses represent apparent circular paths of the stars at different positions along their paths. Grey lines, joining the stars, show directions of gravitational attraction between the stars. If the 3D matter-contents (masses) of these stars are different, their paths may not trace the same apparent circular path. Each star may have a different apparent path but around the barycentre of the combination.



Space is populated with numerous macro bodies. All of these bodies exert gravitational attraction between each of them and the constituent stars in a binary star system. Due to the apparent circular motion of these stars, distances between each of the constituent stars and an external body vary continuously. Variations in distances affect magnitudes of gravitational attraction between each pair unevenly to affect directions of their paths. Additionally, the total 3D matter-contents (masses) of these stars may vary by assimilating random bodies in space as they pass near. Hence, the stability of such a system is very critical. Even the slightest changes in their 3D matter-contents, variation in external influences or uneven distribution of their 3D matter-contents within their bodies would make the system unstable and disintegrate into individual stars, moving in independent directions. Hence, the supposition of stable binary star systems is merely an imaginary exercise. Similarly, elliptical orbits of planets (satellites) revolving around their central bodies are also imaginary concepts.

Cases of multi-star systems are also similar. They are analysed relative to their common barycentres. Barycentres are imaginary points to facilitate analyses of relative movements of these bodies. Only true actions on or by the bodies can provide accurate status. Real motion of every macro body is with respect to an absolute reference in space, provided by an all-encompassing universal medium. In all these cases, gravitational attraction towards all other bodies in space (within active range) has to be considered. As the range of gravitational attraction is infinite, its active range is a huge distance. Neither free bodies nor groups of bodies can float freely in space without translation.

## Reference:

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

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