

Title –

From T Tauri Stars to Coronal Heating via Newton and Einstein

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Abstract –

This article begins with the subject of gravitational collapse producing energy in T Tauri stars. It finishes with heating of the Sun's corona via infrared photons forming charged electrons and protons when they interact with gravity, and all these particles being trapped in magnetic fields which extend to the corona (i.e. heating is due to magnetism plus hot jets). Paragraphs in between deal with $E=mc^2$ versus $E=m/c^2 \cdot c^2$, matter as "coherent space or coherent gravity", linearity and nonlinearity in the universe, human intelligence and divine intelligence, a one-paragraph snapshot of the mathematics behind time travel to the past, why hyperspace doesn't cause the solar system to collapse, photon-graviton oscillation, how space-time ceases to exist physically, a one-paragraph snapshot of the gravitational-electromagnetic equivalence behind time travel to the past, why space-time (and gravitational-electromagnetic equivalence) exist mathematically, why space-time is warped and why DNA is a double helix, General Relativity's deflection of starlight by the Sun is only half the story, photons and gravitons interact to produce reflection and deflection of light. By the way, it occurs to me that my recent articles possess a "modular" aspect. Often, paragraphs from previous articles can be copied and pasted into new articles. The copied paragraphs are modules that are the basis of new articles. Of course, to make those new articles different, the modules are placed in a different order and new words or paragraphs appropriate to different subjects are inserted.

Content -

"T Tauri stars don't generate energy through fusion but rather as a result of gravitational collapse" (Astronomy magazine - June 2013, p.73)

Gravity currents circulate through space and can be referred to as dark energy. See <http://vixra.org/abs/1303.0218> for further explanation regarding gravity's attraction, Kepler's laws of planetary motion, tides, orbits, dark matter. As gravity currents converge on the space bounded by a T Tauri star, they are converted into matter. This agrees with the principle of mass-energy relation, popularly known as $E=mc^2$. We should remember that $E=mc^2$ appears to only be partly correct because the highest speed possible is Lightspeed. Physically speaking, it cannot be multiplied. Einstein himself proved this. The equation $E=mc^2$ can be considered a degenerate form of the mass-energy-momentum relation for vanishing momentum. Einstein was very well aware of this, and in later papers repetitively stressed that his mass-energy equation is strictly limited to observers co-moving with the object under study. The version of the equation applicable here may be $E=m/c^2 \cdot c^2$. Dividing by c^2 then multiplying by c^2 cancels, leaving $E=m$. That is, in this case, (gravitational) energy = (T Tauri) matter.

Exactly how does this energy change into matter? Suppose Albert Einstein was correct when he said gravitation plays a role in the constitution of elementary particles (in "Do Gravitational Fields Play An Essential Part In The Structure of the Elementary Particles?" –

a 1919 submission to the Prussian Academy of Sciences). And suppose he was also correct when he said gravitation is the warping of space-time. Then it is logical that 1) gravitation would play a role in constitution of elementary particles, and their mass, and also in the constitution of the nuclear forces associated with those particles, and 2) the warping of space-time that produces gravity means space-time itself plays a role in the constitution of elementary particles, their mass, and the nuclear forces. Matter can be thought of as “coherent space or coherent gravity” that is bound by forces and gravity. How could gravity be involved in the structure of particles? To understand how this could happen, we need to remember that higher-frequency light (in the visible part of the electromagnetic spectrum) can be converted into lower-frequency infrared light (by being absorbed as visible light and re-emitted at infrared wavelengths by interstellar gas and dust). Similarly, the gravitational waves of space could have a frequency even greater than gamma rays. When converted into lower frequencies, they'd produce all the electromagnetic wavelengths – including T Tauri stars' generation of energy through gravitational collapse.

Einstein's paper suggests electromagnetism interacts with gravity to form particles of matter ($E=mc^2$ or $E=m/c^2 \cdot c^2$ would provide the mathematics that describes the conversion from gravitational energy to the "coherent, organized energy" that is matter). If we adopt a strictly linear view of cause and effect, we'd say the EM that interacts with gravity to produce matter must come from other stars in space because EM energy from the T Tauri doesn't exist until its matter forms. But what happens when the paragraph above is combined with later parts of this article? We see that a) space-time warps to produce gravity, b) space-time itself plays a role in the constitution of elementary particles, their mass, and the nuclear forces, and c) currents of binary digits within Mobius loops are the producers of the 4 fundamental forces of gravitational waves, electromagnetic waves, the nuclear strong force and the nuclear weak force? There is a unification of time with all the space, gravity, forces, and matter in the universe (as Einstein said when forced to summarize the general theory of relativity in one sentence – “time and space and gravitation have no separate existence from matter” - <http://www.spaceandmotion.com/Physics-Albert-Einstein-Theory-Relativity.htm>). In other words; the universe is nonlinear, effects can influence causes (this is called quantum entanglement in time or retrocausality), and it becomes possible for the T Tauri's EM to produce the T Tauri star itself. At first, this sounds too fantastic to seriously consider. But before dismissing it, read the 2nd last paragraph and remember that if the universe sprang from mathematics, it's likely to be the result of the electricity and magnetism in computers. As fundamental as gravity may be to everything else (including EM), we can take a nonlinear approach and simultaneously understand that electromagnetism is fundamental to everything (including gravity). When we realize that every mind exists in a unified field with the maths behind the cosmos and the quantum, there will be absolutely no physical limitations for humans*.

* Does this mean there is no God? No. God's existence cannot possibly be scientifically comprehended in the current non-unified understanding of the cosmos. Thus, many scientists need to invoke the existence of an unlimited number of parallel universes having limitless combinations of the laws of physics (so one of those universes would produce all

the correct laws that enable beings such as ourselves to exist). A non-supernatural God is proposed via the inverse-square law's infinite aspect coupled with eternal quantum entanglement, but Einstein taught us that time is warped. Warped time is nonlinear, making it at least possible that the BITS composing space-time and all particles originate from the computer science of humans - Binary digITS only suggest existence of the divine if time is linear. The inverse-square law states that the force between two particles becomes infinite if the distance of separation between them goes to zero. Remembering that gravitation partly depends on the distance between the centres of objects, the distance of separation between objects only goes to zero when those centres occupy the same space-time coordinates (not merely when the objects' sides are touching i.e. infinity equals the total elimination of distance). The infinite cosmos could possess this absence of distance in space and time, via the electronic mechanism of binary digits (this would enable it to be as malleable and flexible as anything on a computer screen). Zero separation is the case in quantum-entangled space-time and physicist Michio Kaku says in his book "Physics of the Impossible" that modern science thinks the whole universe has been quantum-entangled forever. This means there's still room for the infinity known as God. God would be a suprapantheistic union of the universe's spatial, temporal, hyperspatial, material and conscious parts; forming a union with humans in a cosmic unification, and forming a universal intelligence. Science's own Law of Conservation says the total mass (or matter) and energy in the universe does not change, though the quantity of each varies (I interpret this Law as saying – to get matter and energy, you have to start with matter and energy; which means that time must be warped). So what happens if we subtract humans of the distant future - with their ability to travel into the past** (also, see the paragraph mentioning Yale Uni) and use incomprehensibly-advanced cosmogenesis, terraforming and biotechnology (cosmos, Earth-like planet, and life-generating abilities) from the origins of life? It becomes impossible for inorganic materials – and referring to the creation of amino acids in the laboratory by Harold Urey and Stanley Miller in 1952, relatively simple amino acids - to be assembled into complex plants and animals, whose adaptations are often called evolution.

** Maybe hidden variables called binary digits (binary digits would be the hidden variables which Einstein said carry extra information about the world of quantum mechanics ... and complete it, eliminating probabilities and bringing about exact predictions) could permit time travel into the future by warping positive space-time. And maybe they'd allow time travel into the past by warping a 5D hyperspace # that is translated 180 degrees to space-time, and could be labelled as negative or inverted. (The space-time we live in is described by ordinary [or "real"] numbers which, when multiplied by themselves, result in positive numbers e.g. $2 \times 2 = 4$, and -2×-2 also equals 4. Inverted "positive" space-time becomes negative hyperspace which is described by so-called imaginary numbers that give negative results when multiplied by themselves e.g. i multiplied by itself gives -1 .) The past can never be changed from what occurred, and the future can never be altered from what it will be. Both are programmed by the 1's and 0's.

This 5th-dimensional hyperspace would be tinier than a subatomic particle, like the dimensions invoked by string theory (about 70% of space consists of dark energy, according to the WMAP and Planck space probes – which is interpreted in this article as

70% of a particle also consisting of dark energy since “space-time itself plays a role in the constitution of elementary particles and the nuclear forces” (see paragraph above about Einstein’s 1919 submission to the Prussian Academy of Sciences). This dark energy can be associated with hyperspace and its binary digits, so a) 70% of a particle is composed of hyperspace, and b) the extra dimension exists everywhere in space occupied by particles (also everywhere in “empty” space, where binary digits are referred to as Virtual Particles). With a single extra dimension of astronomical size, gravity is expected to cause the solar system to collapse (“The hierarchy problem and new dimensions at a millimetre” by N. Arkani-Hamed, S. Dimopoulos, G. Dvali - Physics Letters B - Volume 429, Issues 3–4, 18 June 1998, Pages 263–272, and “Gravity in large extra dimensions” by U.S. Department of Energy - <http://www.eurekalert.org/features/doe/2001-10/dbnl-qil053102.php> However, collapse never occurs if gravity accounts for repulsion as well as attraction on both subatomic and astronomical scales (accounts for dark energy and familiar concepts of gravity, as well as repelling aspects of the electroweak force [such as placing two like magnetic poles together] and attracting electroweak/strong force aspects). “Electroweak” and “strong” force can be united in that sentence because gravitation and space-time are united with both the (electro)weak and strong nuclear forces.

When gravitons and photons transfer energy to each other, $E=mc^2$ (set forth in “Does the Inertia of a Body Depend Upon Its Energy Content?” by Albert Einstein - "Annalen der Physik" - November 21, 1905) says the relation of mass to energy means they’re transferring mass, too. Another way to view their interaction is – the product of gravity interacting with electromagnetism is what we call “mass”; the gravitons and photons therefore give mass to each other. Experiments conducted by the Particle Data Group (“Review of Particle Physics” - Physics Letters B, Volume 667, Issues 1–5, 11 September 2008, Pages 1–6) say the mass of a single photon is no more than 10^{-18} eV/c². “Mass of the graviton” by Alfred S. Goldhaber and Michael Martin Nieto - Phys. Rev. D 9, 1119–1121 (1974) - says “...although it is not known if the graviton exists, one can still say that its rest mass is less than 2×10^{-62} g. It’s important to note that this paragraph is referring to either subluminal or rest mass of the photon. In other articles e.g. “Equation Describing the Universe” (<http://vixra.org/abs/1305.0030>), I refer to photons as massless. This is their state at the speed of light (the same applies to gravitons for electromagnetic and gravitational waves are both parts of, and disturbances in, the fabric of space-time) –

It’s impossible to point to the 4th dimension of time, so this cannot be physical. Since the union of space-time is well established in modern science, we can assume the 4th dimension is actually measurement of the motions of the particles occurring in the 3 dimensions of length, width, and height. The basic standard of time in the universe is the measurement of the motions of photons - specifically, of the speed of light. This is comparable to the 1960’s adoption on Earth of the measurement of time as the vibration rate of cesium atoms. Suppose that at lightspeed, time = 0 (it is stopped). Below 300,000 km/sec, in accord with Relativity, acceleration or gravitation causes time dilation (slowing of time as the speed of light is approached). If time’s 0, space is also 0 because space and time coexist as space-time whose warping (gravity) is necessarily 0 too. Spacetime/gravity form matter/mass, so the latter pair can’t exist at lightspeed and photons are massless.

How can space-time equal 0 and not exist? A new definition of infinity is needed. The inverse-square law states that the force between two particles becomes infinite if the distance of separation between them goes to zero. Remembering that gravitation (associated with particles) partly depends on the distance between their centres, the distance of separation only goes to zero when those centres occupy the same space-time coordinates (not merely when the particles' or objects' sides are touching i.e. infinity equals the total elimination of distance[^]). The infinite cosmos could possess this absence of distance in space and time, via the electronic mechanism of binary digits (this would enable it to be as malleable and flexible as anything on a computer screen). To distinguish this definition from "the universe going on and on forever", we can call it "electronic infinity or e infinity".

[^] If infinity (not physical infinity, but e infinity) is the total elimination of distance in space-time, there would be nothing to prevent instant intergalactic travel or time travel to the past and future[^]. Infinity does not equal nothing - total elimination of distance, or space-time, produces nothing in a physical sense and reverts to theoretical physicist Lee Smolin's imagining of strings as "not made of anything at all" (p.35 of Dr. Sten Odenwald's article "What String Theory Tells Us About the Universe": Astronomy – April 2013). It also reverts the universe to the mathematical blueprint from which physical being is constructed (see below – this agrees with cosmologist Max Tegmark's hypothesis that mathematical formulas create reality, <http://discovermagazine.com/2008/jul/16-is-the-universe-actually-made-of-math#.UZsHDalwebs> and <http://arxiv.org/abs/0704.0646>). So, infinity = something, agreeing with Dr. Sten Odenwald's statement on p.32 of his article, that "The basic idea is that every particle of matter ... and every particle that transmits a force ... is actually a small one-dimensional loop of something.

[^] Here's a proposed method for making time travel to the past practical – In July 2009, electrical engineer Hong Tang and his team at Yale University in the USA demonstrated that, on silicon chip-and transistor-scales, light can attract and repel itself like electric charges/magnets. This is the "optical force", a phenomenon that theorists first predicted in 2005 (this time delay is rather confusing since James Clerk Maxwell showed that light is an electromagnetic disturbance approx. 150 years ago). In the event of the universe having an underlying electronic foundation, it would be composed of "silicon chip-and transistor-scales" and the Optical Force would not be restricted to microscopic scales but could operate universally. Tang proposes that the optical force could be exploited in telecommunications. For example, switches based on the optical force could be used to speed up the routing of light signals in fibre-optic cables, and optical oscillators could improve cell phone signal processing. From 1929 until his death in 1955, Einstein worked on his Unified Field Theory with the aim of uniting electromagnetism (light is one form of this) and gravitation. Achievement of this means warps of space (gravity, according to General Relativity) between spaceships/stars could mimic the Optical Effect and could be attracted together, thereby eliminating distance (similar to traversing a wormhole between two folds in space). And "warp drive" would not only come to life in future science/technology ... it would be improved tremendously; even allowing literally instant travel to points many, many billions of light years away. This reminds me of the 1994 proposal by Mexican physicist Miguel Alcubierre of a method of stretching space in a wave

which would in theory cause the fabric of space ahead of a spacecraft to contract and the space behind it to expand - Alcubierre, Miguel (1994). "The warp drive: hyper-fast travel within general relativity". *Classical and Quantum Gravity* 11 (5): L73–L77. Therefore, the ship would be carried along in a warp bubble like a person being transported on an escalator, reaching its destination faster than a light beam restricted to travelling outside the warp bubble. There are no practical known methods to warp space – however, this extension of the Yale demonstration in electrical engineering may provide one.

How could this infinite mathematical something be measured (in other words, what form could it take?)

Let's borrow a few ideas from string theory's ideas of everything being ultimately composed of tiny, one-dimensional strings that vibrate as clockwise, standing, and counterclockwise currents in a four-dimensional looped superstring. We can visualize tiny, one dimensional binary digits of 1 and 0 (base 2 mathematics) forming currents in a two-dimensional program called a Mobius loop – or in 2 Mobius loops, clockwise currents in one loop combining with counterclockwise currents in the other to form a standing current. Combination of the 2 loops' currents requires connection of the two as a four-dimensional Klein bottle. This connection can be made with the infinitely-long irrational and transcendental numbers. Such an infinite connection translates - via bosons being ultimately composed of the binary digits of 1 and 0 depicting pi, e, $\sqrt{2}$ etc.; and fermions being given mass by bosons interacting in matter particles' "wave packets" – into an infinite number of (possibly Figure-8) Klein bottles.^[1] Slight imperfections in the way the Mobius loops fit together determine the precise nature of the binary-digit currents (the producers of space-time-hyperspace, gravitational waves, electromagnetic waves, the nuclear strong force and the nuclear weak force) and thus of exact mass, charge, quantum spin, and adherence to Pauli's exclusion principle. Referring to a Bose-Einstein condensate, the slightest change in the binary-digit flow (Mobius loop orientation) would alter the way gravitation and electromagnetism interact, and the BEC could become a gas (experiments confirm that it does).

^[1] Each one is a "subuniverse" composing the physically infinite and eternal space-time of the universe. The infinite numbers make the cosmos physically infinite, the union of space and time makes it eternal, and it's in a static or steady state because it's already infinite and has no room for expansion. Our own subuniverse has a limited size (and age of 13.8 billion years), has warped space-time^[2] (and spiralling DNA which is made of warped space-time or gravity and shaped like a double helix) because it's modelled on two Mobius loops which can be fashioned by giving a strip of paper a 180-degree twist before joining the ends, and is expanding from a big bang. We don't have to worry about accelerating cosmic expansion – the result of more space, forces, energy and matter being continually produced by binary digits - leaving our galaxy alone in space. As the aspect of gravity known as "dark energy" (see the vixra article mentioned below) causes known galaxies to depart from view, more energy and matter can replace them (since the universe obeys fractal geometry, gravity is the source of repelling and attracting not only on a quantum scale but on a cosmic scale, too i.e. it accounts for dark energy – it accounts for dark matter and Kepler's laws of planetary motion, too [but that's a long explanation

best left in <http://vixra.org/abs/1303.0218>). The Law of Conservation says neither matter nor energy can be created or destroyed (though the quantity of each can change), so a better phrase might be “binary digits recycle spacetime” (when matter changes into energy or energy becomes matter, we commonly say matter or energy has been created). As well, other expanding subuniverses can collide with ours and their galaxies enter our space to keep our galaxy company. (see “Cosmic evolution in a cyclic universe” by Paul Steinhardt and Neil Turok - Phys. Rev. D 65, 126003 (2002) [20 pages] – also see <http://discovermagazine.com/2009/oct/04-will-our-universe-collide-with-neighboring-one#.UY3YTKL-Gbs> that speaks of the “axis of evil”, an unexpected alignment of cold and hot [denser and less dense] spots in the cosmic microwave background; one of the possible explanations of this being collision with another universe [other proposals are that the universe’s inflation wasn’t perfectly symmetrical, and that the entire universe is rotating])

[²] Since the warping of space-time is modelled on two Mobius loops, it should be twice what Einstein calculated. His figure of 1.75 seconds of arc for the deflection of starlight by the Sun has been experimentally proven because starlight which grazes the sun is indeed deflected at 1.75”. However, this is not 100% of the light emitted by a star. It represents the warping of space that is created by one Mobius – the other Mobius accounts for an extra 1.75” of space warping which causes part of the starlight to be gravitationally pushed into the Sun where gravity and electromagnetism interact to form mass (and the energy contributes to heating of the Sun’s corona or outer atmosphere). The binary digits in space-time (assumed by modern science to be “virtual particles”) confer energy (and mass) on cosmic rays that travel far through space, turning them into UHECRs (ultra-high-energy cosmic rays). Similarly, the digits give energy to a star’s photons – which has the potential to cause scientific instruments to overestimate the energy released from distant stars. However, this increase in energy of the light photons may be balanced by the stretching of space, which causes decrease of energy (as of 21 March 2013, the Hubble constant, as measured by the Planck Mission, is 67.80 ± 0.77 km/s/Mpc –“Planck Mission Brings Universe Into Sharp Focus” - <http://www.jpl.nasa.gov/news/news.php?release=2013-109&rn=news.xml&rst=3739>). Thus, the speed of light in a vacuum would be a constant.

[^{2.1}] How is passing starlight deflected towards the Sun? The refracted gravitational wave heading for the sun “captures” [^{2.2}] the light from distant stars that appear close to the rim of the sun before the gravity wave’s diverted to the centre of our star (string theory predicts that gravity’s gravitons interact with light’s photons). Acting as a gravitational attractor, the refracted wave carries the light with it as it bends towards the sun’s centre. The light is not carried all the way but breaks free since photons have their own energy and momentum. However, the light is carried far enough to be deflected a tiny amount from its original path. According to Newton’s 3rd Law of Motion (to every action there is an equal and opposite reaction), the light will be deflected toward the sun by an equal and opposite amount to the gravity wave’s deflection to the solar interior. “Opposite” means the light wave travels *away* from the sun at approx. 186,282 miles per second and the gravity wave travels *into* the sun at the same velocity. “Equal” means, since experiments have shown the bending of starlight to be 1.75 seconds of arc (in geometry 60 seconds = 1 minute, 60 minutes = 1 degree, and there are 360 degrees in a circle), the refraction of gravitation from the solar

rim is also 1.75 arcseconds (as density increases the deeper the gravity wave goes, the greater its refraction becomes).

[2.2] Gravitons and photons interact via Einstein's mass-energy relation. A gravitational wave acts as an attractor and captures light by feeling friction with the mass-energy of the photons. This causes gravitational refraction or bending in which part of the gravity pushes a photon by travelling in the direction of the centre of each photon in the light (once it reaches the centre, the 3rd Law of Motion accounts for the photons' reaction of being attracted to the gravitons). Compared to the other forces we know; gravity is incredibly weak and the weak "equal but opposite" reaction cannot overcome the heaviness of macroscopic objects which consequently don't float off towards the gravity doing the pushing. Photons, when pushed towards the surface of Earth, are so tiny and light that they do recoil from the push – they "reflect".

[2.3] Starlight that is gravitationally pushed into the Sun is not the only cause of coronal heating – it's undoubtedly extremely **unimportant** in this respect. The intense magnetism of sunspots prevents heat from rising to the surface and radiating into space because magnetic fields restrict the motion of charged particles - and infrared photons form charged electrons and protons when they interact with gravity in wave packets (at the most basic level, this process is mathematical and relies on quantum Mobius loops along with their translation into fractally quantum-sized figure-8 Klein bottles). As the sun's magnetic field extends to its corona (outer atmosphere), the infrared photons trapped within it heat the corona to temperatures of one to three million kelvin. Recall that "magnetic fields restrict the motion of charged particles - and infrared photons form charged electrons and protons when they interact with gravity in wave packets". This means heating of the corona is not solely dependent on magnetic fields but also, as a result of the electrons and protons, on "... rapid heating events like fast jets of hot material ..." (Astronomy magazine - April 2013, p.50). In the Astronomy article; Scott McIntosh from the National Center for Atmospheric Research in Boulder, Colorado, USA writes, "The Alfvén (magnetic) waves likely dump their energy in the corona, too, but the means by which that happens is a topic of great debate. So, we still don't know exactly why the Sun's corona is hot ..." This article proposes that magnetic waves "dump" energy in the corona by interacting with gravity waves refracted towards the sun's centre from the outer solar system, thus producing mass in the corona and giving the illusion that gravitational attraction emanates from the sun's centre.
