# New Physics and The Solar Corona


The Big Solar Corona[1]

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## Introduction

The physics of the 20th century ends, and the new physics of the 21st century begins with better understanding our sun's corona.

Even though our local star's halo-like corona has been observed for decades with increasingly advanced instruments, science still does not fully know why the relatively ethereal corona is in some parts more than 200 times as hot as the sun's average photosphere surface.[2]

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[1] https://apod.nasa.gov/apod/ap170920.html

[2] https://www.space.com/5521-sun-hold-secret-dark-matter.html

A very recent NASA sounding rocket above Earth's atmosphere appears to have located the source of this energy within numerous nanoflares, or spicules – but the modest ascent of these plasma jets does not fully answer the total coronal question:[3]

Sounding rockets on very brief flights have been equipped with advanced spectrographs capable of detecting clustered nanoflares in active areas of the photosphere. They have detected large numbers of individually undetectable flares that shoot up *6,000 miles* into the chromosphere, then dissipate – and thereby inject in aggregate large amounts of energy at multi-million degrees into the chromosphere and lowest solar corona. This is an exciting experimental finding, but it is incomplete by itself.[4] Not answered is the amount of dissipated heat energy that immediately returns to the cooler photosphere.

Understanding the corona's great secret requires less physics of the past, and more of the future. Several old paradigms need to be updated by the scientific community. Some new paradigms will be briefly mentioned herein, with important footnoted links.

Building a better physics picture of the solar corona first requires comprehending several key elements:

(1) What are the fundamental components of energy/matter?
(2) What is the real geometry of space and gravity?
(3) How many universes are there, one or many?
(4) Is quantum theory complete?
(5) Working with wavelengths.
(6) What is dark matter?
(7) How do distal coronal temperatures ramp up so much?

Once we comprehend the distal coronal halo, both in temperature and dynamic structure, we can better comprehend an array of other physics and astrophysics questions. Accumulating experimental data gives us more tools to "experimentally verify" the foundational yin-yang dimension through logical deduction.

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[3] https://www.space.com/38401-microexplosions-could-power-sun-corona.html

[4] https://www.nasa.gov/feature/goddard/2016/nasa-funded-sounding-rocket-solves-one-cosmic-mystery-reveals-another

# I. NEW PHYSICS

## What are the fundamental components of energy/matter?

Fully appreciating what we can see with the naked eye, such as the incredibly beautiful visual corona during a total eclipse, requires also envisioning otherwise invisible elements that permanently compose and energize the corona and other macro and micro phenomena:

For example, spaceship Earth's biosphere is a super-organism. Human bodies and human societies are super-organisms. A human digestive system contains $10^{13}$ to $10^{14}$ microorganisms.[5] There are as many as 100 trillion cells in each of us.[6] We have about a hundred billion neurons in our brain, with about a thousand synapses for each neuron, or 100 trillion hard neuron links in all.[7] We have untold trillions of viruses in our body. Cellular mitochondria organelles (the energy factories) are thought to be ancient bacteria that long ago synergistically colonized the multicellular world.[8] Our gut bacteria microbiota may enhance, or diminish, our brain powers.[9] Other life forms in our biosphere are similarly sophisticated in their own way, including associations of life forms such as the social insects.

Everyday consciousness cannot fully embrace all the details of our actual essence, only certain gross elements necessary for survival. That's just as well, because no number of neurons or computer chips could simultaneously process and evaluate in real time all the activities and existential meanings within our human super-organism.

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5 https://en.wikipedia.org/wiki/Superorganism

6 http://infomory.com/numbers/number-of-cells-in-the-human-body-2/

7 https://www.livescience.com/32311-how-many-cells-are-in-the-brain.html

8 https://www.thoughtco.com/mitochondria-defined-373367

9 http://www.bbc.com/future/story/20140221-can-gut-bugs-make-you-smarter

Now things get really interesting: We have only begun to look deep into our individual bodies. Cells, bacteria, and viruses are individually and collectively super-organisms in their own right. For example, the three individual quarks that make up each proton or neutron are at $10^{-18}$ meters in size. That's 18 negative logarithms of ten. Absolutely fundamental y/y elements are much, much smaller – as much as twenty logarithmic dimensions smaller than even subatomic quarks.

Consider that humans are eighteen positive powers larger than a single quark. Going larger from our human size yet another eighteen logarithmic powers of ten yields 1057 light years ($10^{18}$ meters).[10] Combining the distance from just one quark to 1057 l.y. is 36 powers of ten meters larger than a single quark – but going down to the Planck dimension from human size is negative 35 powers of ten. In other words, going from the start of the Planck dimension to 1057 light years is $10^{53}$ logarithmic powers of 10 meters. Compare this last number to the estimated $10^{80}$ atoms in the entire visible universe.

Does this awesome large-and-small dimensionality (mostly unseen and unseeable) excite you, or give you a mega headache? Either way, reality is what it is, independent of our limited instrumental powers of measurement. To appreciate such extreme dimensions requires the power of mind and scientific logic, both inductive and deductive.[11]

Quarks are considered by the Standard Model of particle physics to be the atomic nuclear building blocks. Photons and electrons are somewhat smaller – or not, if you hold that photon waves are primary, and electrons in atoms are electromagnetic (EM) clouds around their atomic cores. All that structurally counts squeezes down to near logarithmic minus 18 meters, or does it?

Physics talks about the Planck dimension below $10^{-35}$ meters, where quantum randomness makes classical EM measurements theoretically impossible, assuming we could make classical instruments capable of that much precision. In this case, the quark scale is like the human, and the Planck scale begins at a dimension about 18 powers of ten smaller than a quark. But we are still not at the real invisible bottom.

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[10] http://www.kylesconverter.com/length/meters-to-light-years

[11] http://astronomy-links.net/SeeingUnseeable.html

There is no purely mathematical limit to size, to where potential logarithmic dimensions approach positive or negative infinity. The smallest real physicality does not need to approach absolute zero in size. General Relativity (GR) math accepts a zero size in zero time for the compressed seed universe just before it expands. Quantum theory does not embrace absolute zero size, indicating that compressed quanta will exhibit a quantum pushback just before zero size and energy are reached.

There are two non-chaotic visions of what lies within the Planck: First is the 20th-century idea of one-dimensional strings dwelling therein. Two-dimensional membranes or branes within many dimensions also dwell therein. There are multiple problems with this otherwise too-beautiful math vision, not the least of which is the absurdity of purely linear 1D strings.[12] The second vision arises in the 21st century from 3D strings that self-assemble from attached, near-point-size, spherical yin/yang "quanta."

This second vision starts our 21st century road to understanding the Sun's distal coronal heat. I have recently written a concise essay comparing old string theory with the new paradigm of beaded yin/yang strings. Please click on below to read this link now:[13]

The greatest problems with bosonic string theory and its 26 math dimensions, or 10 with superstring theory, or 11 with M-theory, start with the misconception of what exactly is a string.[14,15] Because of Coulomb's electromagnetic law, with its inverse square relationships, extremely tiny "points" of energy/matter will magnetically form highly cohesive 3D spheres. Spheres at any size are the most efficient shape – just like planetary objects larger than 400 miles in diameter form efficient spheres from sufficient inverse-square Newtonian gravity.

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12 http://astronomy-links.net/Holograms.html

13 http://astronomy-links.net/String.Types.pdf

14 https://ultraculture.org/blog/2014/12/16/heres-visual-guide-10-dimensions-reality/

15 https://en.wikipedia.org/wiki/String_theory#Extra_dimensions

# What is the geometry of space and gravity?

A string cannot literally be a 1D line in a 2D universe – but a string of 3D, cohesive, sub-Planck, yin/yang balls can "look like" a 1D string from a proper distance.[16] From these fundamental "beaded" elements of the universe we can build every thing!

In a universe of three physical dimensions, and a temporal fourth, we can build enough complexity for everything imaginable. We don't need the psychedelic horror of string theory's virtually infinite number of possible hyperspace *universes*, which in M-theory approaches $10^{500}$ or larger.[17] Try to wrap your brain around that number of universes.

How does the true geometry of space and gravity relate to our new analysis of the solar corona?

Einstein's General Relativity only has spacetime, which is really four dimensions within this one and only universe. That was brilliant for 1915. Rubbery physics-class, 2D spacetime, string theory membranes associated with his too-clever geometric gravity – along with tractor-beam "graviton string gravity" across dimensional branes – do not enlighten. Bosonic string theory creates this elegant illusion, which the maths of 1D strings among a myriad of 2D branes embellish. What seemed like good ideas before now no longer pass the smell test.

All the so-called physical proofs of General Relativity can be better explained by a 21st century version of push/shadow gravity.[18] GR has the smooth correlative math – but push/shadow gravity has the correct causative model. General Relativity fails at all dimensional levels.[19] Theories that partially spring from GR also fail, or are at least incomplete, for that dimensional reason alone.

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16 http://astronomy-links.net/2Dis3D.pdf

17 https://www.universetoday.com/42696/if-we-live-in-a-multiverse-how-many-are-there/

18 http://astronomy-links.net/GGvsGR.html

19 http://astronomy-links.net/correlation.and.causation.pdf

Following are four of my new-physics links explaining some of the fatal faults:

(a) Here is an explanation for why visible photon vectors bend while passing close to the sun's surface – and why GR and the corona have nothing to do with what gravitationally happens:[20]

(b) Here is how and why GPS does not causally support GR:[21]

(c) Here is one of several reasons for the total failure of GR at great distances within our region of the local universe:[22]

(d) Here is why Einstein's "fudge factor" cannot lead to Dark Energy shaping our local universe within the real 3D multiverse:[23]

What more evidence does science need to reopen the inquiry into real gravity? Einstein was not a god, however great his 1915 ideas were. A new physics is therefore in order. As New York Yankees catcher, Yogi Berra, comically but wisely said, "When you come to a fork in the road, take it."

# How many real universes are there?

The idea of a real 3D multiverse having interpenetrating local "bubble-bath" universes is much more useful and meaningful than the psychedelic number of possible math universes in string theories. Real individual universes begin with their own big bangs, and then expand to dissipate into their adjacent surrounding universes – which are also mutually expanding and interpenetrating. Concurrent local system cycles begin and end among many juxtaposed local universes in the cosmic bubble bath. Thus turns the multiversal Yin-Yang mandala.

The idea of Dark Energy is just an observational math gimmick without elegance. The deceptive spacetime math model of GR does not allow for gravitationally interpenetrating, 3D, adjacent universes, which were of course unknown in 1915. Hypothesizing today only one

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20 http://astronomy-links.net/Allais.html

21 http://astronomy-links.net/LightSpeed.pdf

22 http://astronomy-links.net/DipoleRepellerExplained.pdf

23 http://astronomy-links.net/GGvsGR.html

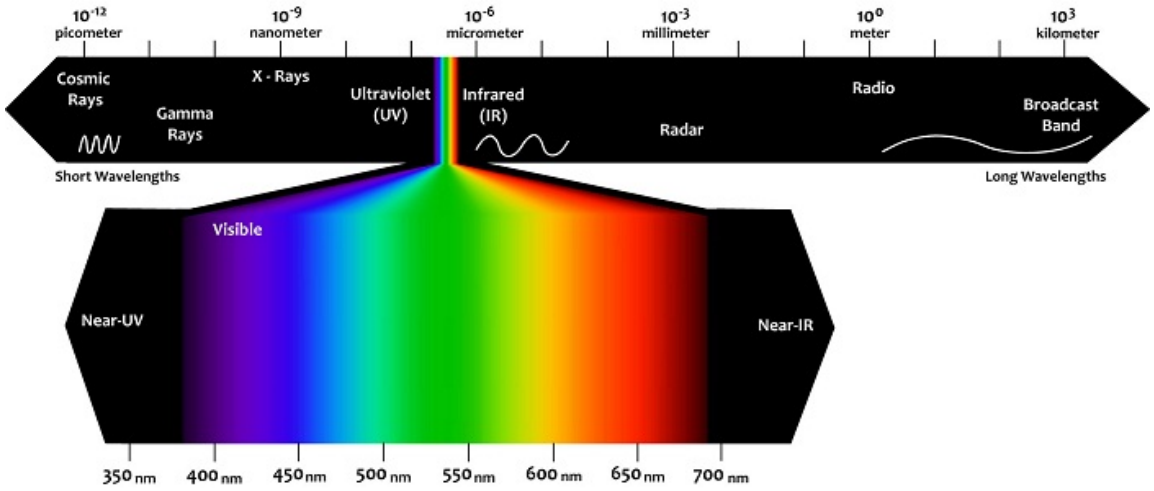
local universe inside infinity is like looking for God transcending it all. From the perspective of clear, honest religion and philosophy, a singular local universe in a vast void severely limits what omniscient omnipotence could and likely would create out of curiosity.

The solution is to understand that gravity membranes, or branes, are just math ideas that try to describe, but cannot explain, what is going on. A much better real model is the 21st century revision of a previously highly flawed model that has been around since the time of Newton: push/shadow gravity, with significant modern modifications.

Looking at the real 3D multiverse also helps to resolve the formerly deep puzzle surrounding the predominance of matter over antimatter, and the possible role of Higgs bosons in shaping our local universe.[24]

Why do we go to the trouble of talking about a multiverse when the "subject" is our sun's corona? The subject in astrophysics is never just about any one subject. The whole may be greater than the sum of its parts, but each fundamental part is required to constitute the whole. If we truly know almost everything about just one thing, then we are properly positioned to better understand aspects of other things, including the solar corona in our locality of the multiverse.

## Working with wavelengths




[24] http://astronomy-links.net/Antimatter.pdf

Electromagnetic wavelengths are essential for appreciating the power of shorter frequencies coming from shorter rotating and oscillating particle strings. If we go far enough down in size, and thus up in frequency, we reach a great understanding.

Wave length is often chosen over frequency to quantify light, but both are proportional, and either is accurate. Wave–length and also frequency are directly proportional to a wave's energy, as originally described by Max Planck's equation: $E = hc/\lambda$

In this famous formula E is energy, *h* is Planck's constant, c is the speed of light – and the denominator λ is the wavelength of light. Light of a shorter wavelength (such as violet) thus has a higher wave frequency and more energy than light of a longer wavelength (such as red).[25]

Consider the shortest known wavelengths from ultra-high-energy extragalactic cosmic rays. These are associated with particles more massive than photons, which is why powerful cosmic ray beams from galaxies billions of light years away are indirectly detectable.[26] Our ordinary sun emits EM in gamma, X-ray, and ultraviolet lengths, plus visible and longer waves.

The lengths of cosmic ray waves, from crest to crest, are in the $10^{-12}$ picometer range, as shown in the illustration above. A picometer is only one trillionth of a meter, which means one cosmic ray wave is about $10^{-24}$ meters from crest to crest.[27] That's close to the smallest known particle, the solar neutrino.

The Planck dimension however begins at the negative 35th meters length; and individual y/y particles may be at the negative 37th or negative 38th dimension. Directly measurable particle-string waves are much larger than the Planck dimension, such as in the range of gamma or x-rays, or even longer in naked-eye-visible frequencies.

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25 https://www.chroma.com/knowledge-resources/about-fluorescence/introduction-to-fluorescence/working-in-wavelengths

26 http://www.astronomy.com/news/2017/09/cosmic-rays-extragalactic-origin

27 https://www.aqua-calc.com/what-is/length/picometer

The bottom line here is that there is a huge dimensional difference between what we can directly measure in wave frequencies – and how much more heat higher frequencies achieve as they approach the size of very small particle-string waves. Spectrographically detectable light frequencies, in comparison, are composed of far longer and therefore less energetic particle-strings.

If Sol were like an imaginary cool, rocky planet of one solar mass, its dark matter gravity halo would not glow from nanoflare ejected energy, and we would not detect a corona. A real rocky planet of the mass of our star would by itself gravitationally ignite into a star, likely with nanoflares – but the idea here is to mentally envision what would happen with a local dark matter corona without large amounts of injected energy.

# Is quantum theory complete?

Even quantum theorists will tell you their theory is not complete. They will also say it's the best description we have for phenomena, and note that efficient measurements of quantum effects can be very precise. However, if quantum mechanical and field models are not complete, what is missing? What is the significance of those gaps in knowledge?

A visual metaphor I like is the idea of "castles in the sky." Since we do not and cannot fully know everything, and therefore cannot fully know anything, we all live in perceptual castles in the sky. We are happy to virtually walk among our castle's levels, as long as we don't look outside at the puzzling, obscuring clouds below.

Some very wise people admit their limits. This is what Einstein said one year before his death in 1955 when he feared his continuous structures would soon be overthrown: "In that case, nothing remains of my entire castle in the air, gravitation theory included, and of the rest of modern physics." (Pais, A. 1982. *Subtle is the Lord: The Science and the Life of Albert Einstein*, Oxford U. Press, Oxford, UK, p. 467.)**[28]**

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[28] http://astronomy-links.net/AstrophysicsCloudCastles.pdf

Forty years after the publication of General Relativity in 1915 Einstein's theory was under siege by variations of quantum theory. It all began with the discovery that light behaves both as a particle and a wave. Ironically, Einstein got his Nobel for that. We can know the position of a particle, but not its vector movement; and vice versa, according to Heisenberg. More recently, the point-like quanta of quantum mechanics (QM) have been superseded by frequency waves and quantum foam in quantum field theory (QFT). Of interest is De Broglie's postulate of the wave-like properties of particles.[29]

New physics owes more to quantum theory than to Relativity. Quantum mechanics allows for the simplest algorithms to best explain larger expressions of that which cannot be simultaneously and directly measured as to movement and position. 20th century QM doesn't totally reject Einstein's geometric gravity sheets, but a more modern version of quantum theory will.

"Quantum foam" is an excellent idea, and it, along with *De Broglie-Bohm bow waves*, shows how we can best understand gravity waves without GR, despite the hasty 2017 Nobel.[30] It should be noted that the more recent discovery of neutron star mergers does not alter this gravitational understanding. Quantum foam is in some ways close to Brownian motion of molecules, for which Einstein is also famous. The activity of quanta appears random from some perspectives, but it can be perceived classically on a larger, or individual, scale.

Individual "quanta" inside the foam are not to themselves chaotic, nor are they randomly flipping between being and non-being. Schrödinger's cat is either dead or alive – and our puzzled perceptual presence outside its box has nothing to do with the cat itself.

Living in a quantum-theory cloud castle, the quantum space below its bottom floor is chaotic. Indeed, everything is ultimately chaotic even within this castle, but chaos at classical scales inside the castle can be operationally described by classical physics. New physics rejects pure chaos as foundational. Chaos has a weird way of leading to the second law of thermodynamics, which is the most depressing of

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[29] http://physics.gmu.edu/~pnikolic/PHYS308/lectures/deBroglie.pdf

[30] http://astronomy-links.net/LIGO.and.GR.pdf

all ideas in physics. However, the elegant multiverse offers us a much less depressing and corrective perspective on the so-called "second law."[31]

Local push/shadow gravity includes mixing injections of negentropic kinetic energy from all distant directions. Mixing thereby tends to support the idea of overall multiversal thermodynamic homeostasis, rather than entropy. Entropy/chaos can appear to eventually win out within local closed universes, but such closed universal systems only exist in antique physics. The second law was invented to explain energy inefficiency within work, whereas the injection of negentropic kinetic energies from outside a local universal system supports overall multiversal homeostasis.

New physics starts with extremely tiny Yin-Yang (y/y) particles *simultaneously* expressing matter and energy, while following the law of conservation of energy and matter. The *Lotus Sutra* from 2,500 years ago refers to the concept of this simultaneous energy/matter as (in Sino-Japanese) "renge."[32] (Renge is pronounced "ren-gay.")

Individual, equal particles are about in the $10^{-38}$ meters dimension. Their powers of electromagnetic (EM) cohesion are immense in strings, due to their juxtaposed 3D particle centers being so close to each other. These string-sphere chains of equal units have no weakest EM link between each other. Super cohesion between identical adjacent particles enables long strands of such particles to populate larger dimensions, including those larger than Planck. It also allows for larger loops and clusters of cohesive particles. In this architectural way extremely small and directly undetectable units compose detectable matter (baryonic and dark) – and multiversal push/shadow gravity. This is the real foundation for our castles.

There are two types of electromagnetism: primary and secondary:

Primary electromagnetism is understood as pure cohesion without plus and minus poles. This type exists among particle-strings; and with the so-called strong force.

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[31] http://www.physicsplanet.com/articles/three-laws-of-thermodynamics

[32] https://en.wikipedia.org/wiki/Namu_Myōhō_Renge_Kyō

Secondary electromagnetism is bi-polar, and that type is what we commonly measure with our instruments. It is also known as the electroweak force.

Therefore, there are three apparent primary forces: push/shadow gravity, primary electromagnetism, and secondary electromagnetism.

Real strings can be magnetically neutral, as are loops of particles. Such strings can also be +/- at opposite ends. Yin-yang strings can have neutral polarity on one end, and either positive or negative polarity at the other end. Again, this polarity is not random and chaotic. It's just that we cannot directly measure phenomena at that level, so we imagine it's chaos. Here is where the measurable macro phenomenon of coronal heating is so revealing – providing us with a classical window into the unmeasurably small foundational universe which composes everything in measurably populated dimensions.

Particulate strings can express EM polarity at one end, and no polarity at the other end, while all particles along a string cohere from primary EM. Thus, both primary and secondary polarity can express simultaneously within one string, and within each y/y particle. Here may be an insight into the so-called weak force in atoms.

Sufficiently long particulate strings can express with their different lengths as EM units that we can detect. These units can be visible to the naked eye's retina, or visible to spectrographs. There is also an important realm where wave-strings are too short to measure even with spectrum signatures – but still express increasingly powerful EM that we indirectly measure through net coronal heating.

# What is dark matter?

Dark matter, unlike so-called dark energy, is real within our own universe. It should also be abundant in neighboring universes. Because its components are foundational, they are very ancient.

Dark energy is used in GR as a mysterious anti-gravity force to help explain our assumed single universe's post-big-bang expansion at an

accelerating space. We can measure the accelerating expansion very well, but haven't a clue from inside our cloud castle as to how or why.

However, once we understand that multiple and similar "bubble" universes juxtapose our own bubble – and that there are many areas of significant mass, probably dark, near the edges of our expansion – then the proper theory of gravity clearly explains away so-called dark energy. Dark energy becomes a push/shadow gravitational interaction between approaching large masses near the edges of adjacent universes within the overall multiverse, not a fudge force only within one universe.

There may be four or five times as much "dark matter" as baryonic matter (which is considered "normal" matter). We don't know where the preponderance of dark matter comes from, or its age. The answer likely involves fundamental energy/matter pre-dating our big bang.

Questions such as why there are supermassive black holes seemingly too early in our universe's history are easily explained by understanding what was previously here in "our" space long before our infant big bang expanded outwards. It still is here within the same volume of space now occupied by our expanding local universe.[33]

Since the 1930s science has known that dark matter exists, and it was also named as such. It has been measured by its gravitational effects on baryonic (detectable) structures. We know about dark matter outside our Milky Way, and also outside similar pinwheel galaxies, causing the outer galactic zones to rotate faster than they otherwise would do if there were only the central baryonic mass.

Dark matter is also within galaxies. Whereas there are massive clouds of dark matter outside our galaxy, the dark matter within our galaxy is generally more loosely distributed throughout our pinwheel structures. A lot of this diffuse dark matter is gravitationally fairly close to the supermassive core of our galaxy. Gravitational halo collections of mostly primeval dark matter are likely associated with most or all stars similar to ours.

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[33] https://cosmosmagazine.com/physics/did-dark-matter-cause-early-supermassive-black-holes

Black holes function like a form of "dark matter," because EM light inside cannot escape their gravity Schwarzschild radii. The core of a black hole could be crushed beyond neutron-star cores. Central neutrons would be further crushed in supermassive black holes, but not all the way down to loose yin-yang particles. However, it is possible for the core of black holes to be fused, cohesive, yin-yang populated spheres.

At any rate, there is an interesting space between the surface of such a core and its gravitational capture radius within which EM cannot escape. Yes, the real universe is magical and powerful beyond our previous imagination, but not beyond understanding.

# II. THE SOLAR CORONA

## How do distal coronal temperatures ramp up so much?

Ever elusive "dark" matter is there for all to partially "see" during a total eclipse, including the one in 2017 that we in the USA have just enjoyed. Coronagraph instruments can indirectly see it anytime. However, there is much more to "see" than what radiates in the visual spectrum among ions, or in detectable spectrographic lines.

Other parts of the EM spectrum at frequencies beyond our direct powers determine most of the distal coronal heat. Theory explains how high heat arises within dark matter halos associated with any star like our sun. For example, chromospheres (the bright red atmospheric layer between photosphere and corona) have been found with other stars.[34] The physics of our solar corona appear to be the halo physics of any similar stellar locality.

[34] https://en.wikipedia.org/wiki/Chromosphere

Determining a relatively precise factor for Dark Matter's contribution to coronal heat involves (a) calculating the energy injected at low levels from numerous spicule nanoflares; (b) calculating how and why their highest temperatures quickly dissipate after 6,000 miles; (c) calculating how much of that dissipated heat immediately returns to the photosphere; and (d) calculating how 1+mK heat persists for well over a million radial miles into the outer corona.

Even though extreme X-rays and extreme gamma rays within nanoflares produce ionic spectral shifts among elements indicative of one to several million Kelvin, we also need to calculate what is happening within the nanoflare model. Supercomputer calculations would be needed to model the extremely high frequencies and temperatures which do not show up in spectrographs. They also need to factor in the different particulate masses within different waves. For example, photon EM can have high gamma ray frequencies, but much less energy than cosmic rays from larger particles with even shorter waves, but with a mass 200 times that of electrons. It's in $E=mc^2$.

Super X-rays and gamma rays from nanoflares ionize more than just Hydrogen. Spectrographs reveal heating activity among many different solar plasma ions. The Sun does not produce cosmic rays with some secondary muon particles reaching Earth's surface. These even more powerful rays (particle/waves) pass through the corona without generally heating it, just as they pass through dark matter clusters elsewhere without electromagnetically energizing their "darkness." Nevertheless, the vibrating particles of cosmic rays are themselves collections of smaller vibrating y/y particles and strings.

Cosmic "rays" (an archaic term) are as waves many dimensions longer than the smallest y/y string frequencies – but cosmic rays are associated with rest mass that gains tremendous kinetic mass/energy when they are moving at relativistic speeds.[35] In contrast, all EM waves travel at the same EM speed – so their different powers are simplistically defined as a function of frequency, not mass. There is, however, no such thing as a massless y/y photon in any frequency, preserving the wave/particle duality.

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[35] https://en.wikipedia.org/wiki/Cosmic_ray

Great masses of loosely organized dark matter are associated with intergalactic areas, and also distributed among and around clusters of galaxies. To a large degree the gravitational architecture of our visible universe is determined by clustered dark matter accumulations, much of which likely predates our big bang event by many billions of years. Within that vastness are also many ions and other atomic components ejected by supernovae and neutron star mergers from this and earlier universes which will help form the next generations of stars.

Within most seemingly empty interstellar space an isotropic, but much less dense, distribution of ancient dark y/y matter exists in the form of what has been popularly named quantum foam. Because of its low density per unit volume of space, the forces of ionic repulsion and Brownian motion are superior to the push/shadow gravity therein. Interstellar darkness to us is from matter that has not been sufficiently concentrated and energized by energy sources such as our adjacent solar furnace, and so it remains outside historical observation and theory. This is why the Sun's halo of mostly dark matter is so valuable to science. The more we learn, the more we understand that isotropic deep-sky dark and baryonic matters are not that different, just generally composed of different-sized units.

A fascinating interstellar and intergalactic phenomenon within this dark "foam" is the recent detection of so-called gravity waves.[36] These waves are situationally real, but *not* clear evidence of GR gravity. They are likely push/shadow gravity *De Broglie-Bohm waves* following black-hole or neutron-star mergers within the universal y/y particle soup. The recent detection of neutron-star mergers, along with EM measurements, does not affect this gravity model, even though it gives us dual windows on the visible universe.[37] Nor do such "gravity waves" heat up the interstellar medium, or any stellar corona.

Both our visible corona and detected gravity waves originate from localized events. Powerful push/shadow waves recorded so far are associated with merging large-star-mass black holes, and with

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[36] http://astronomy-links.net/LIGO.and.GR.pdf

[37] https://www.washingtonpost.com/news/speaking-of-science/wp/2017/10/17/what-the-new-gravitational-waves-discovery-means-for-the-future-of-astronomy/?utm_term=.f66db027877d

similarly merging neutron stars. Gravity waves and coronal glow are quite different, but the general idea is that it takes a lot of local energy within a dense collection of dark matter to produce instrumentally detectable dark matter.

The largely dark-matter halo that surrounds our sun has y/y components similar to what surrounds galaxies and galaxy clusters. Within this interstellar geography are also isotopes of numerous atomic elements and molecules, primarily Hydrogen-sourced electrons and protons. At the y/y level, distribution of sub-Planck objects is like what Einstein described on the molecular scale in his paper on Brownian motion.

Particulate solar coronal dark matter is pushed toward the proximal Sun's density due to multiversal push/shadow gravity units interacting with a myriad of individual particles of all types. However, coronal particles are generally not drawn into the sun itself, due to these tiny particles electromagnetically bouncing off and spacing each other. Some dark matter nevertheless is drawn into the photosphere, but newly arriving dark matter maintains the coronal halo's apparently homeostatic structure.

The "atmospheric" coronal halo dissipates two-plus million miles above the sun's photosphere surface, where increasingly weaker net push/shadow "attraction" is superseded by the particles' mutual repulsion and dispersal. The quantum mechanics (QM) idea of tiny random quanta collectively appearing to us as a classical event works very well to describe the overall result. The apparent outer boundary of our visible corona changes according to large EM flows and coronal mass ejections that surge outward from the photosphere. Fresh kinetic energy from nanoflares, flares, and coronal mass ejections (CMEs) accounts for the changing "spikes" seen in the large corona. Nanoflare spicules, in contrast, do not themselves significantly change the size and shape of the overall corona.

Coronal mass ejections are the source of energy storms that frequently attack Earth's radiation belts, and sometimes put on auroral shows in the lower belt. They are mostly composed of charged particles. CMEs pass through the coronal halo, with parts of some reaching Earth when the direction of a CME and the path of Earth

converge. (These ejections are somewhat misnamed, because they are at inception photospheric phenomena, and only later after blasting off become associated with the sun's corona. A better name would be Solar Mass Ejections, which would distinguish them from EM flares.)

Strings of y/y particles would perpetually cohere if undisturbed. However, the deep space arena is very energized. Density of plasma clusters determines the degree of field EM disturbance. Elsewhere, where there is an ethereal distribution of plasma quantum soup the field energy is continuous. There is in sum everywhere a constant interchange between matter and energy, which is the essence of Yin (matter) and Yang (energy).

When a statistical collision happens randomly to an individual string (either isolated, or attached to a graviton dock) there can be a separation of cohesive units. Two shorter particle strings of different lengths typically result, each of which now vibrates or rotates at a higher frequency. (This is how kinetic energy is transferred to higher frequency energy, conserving energy/matter.) Some longer y/y strings will vibrate/spin at sufficiently lower frequencies that we can detect through changes in atomic ions.

Push/shadow impacts at subluminal speed can hit and energize y/y real gravitons sufficiently to shake off some attached y/y strings. The nature of such ejected strings determines their "spin" and their energy. Whatever the initial collision speed, the separation velocity of each new string is at EM speed, with different wave frequencies.[38]

[As an aside, it is very likely that the Large Hadron Collider is daily producing large numbers of undetected, very-short EM strings. It uses bombarding protons at near-luminal speeds having very significant kinetic energy. All sorts of detectable particles splinter off from these proton collisions, and are dutifully recorded.

Concurrently, much smaller, and electrically neutral, particle-strings are liberated and immediately shoot up through the LHC's overlaying earth, and down through the entire Earth, forever unmeasured. We note by comparison how even electrically neutral solar neutrinos can

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[38] http://astronomy-links.net/LightSpeed.pdf

penetrate the Earth, yet they are from ten to fifteen logarithmic dimensions of ten larger. Therefore, the LHC is generating amazing experimental evidence to demonstrate new physics, but cannot now record the data.]

Within collections of dark matter sufficiently far from a stellar energy source the dark matter appears dark to our instruments because of the much less frequent collisions per unit volume. In other words, individual new strings could be there, but not enough are found per unit volume in "empty space" to be measured. Of course, many of these y/y strings are so high in frequency that they could not be measured at any density or distance, except indirectly through plasma temperature changes.

Deep "empty space" lacks sufficient kinetic energy sources to generate measurable frequency/wave temperature changes. Such space does however have "quantum foam," which has the virtue of recently being detected in so-called gravity waves. Our space craft will blissfully fly through "empty" space, while the quantum foam "quanta" simply pass through our crafts as if they didn't exist. On the other hand, cosmic ray particles encountered during spaceflight are very much larger, and they can damage our craft, including any humans inside.

Creation of new 3D strings happens everywhere in the multiverse. Trans-universal flows equally interact gravitationally from any direction with our own universe's matter, both baryonic and dark. It happens with some direction where the accumulation of fundamental units (beaded gravitons, strings of beads, etc.) is more dense, providing a shadow. This omnidirectional flow in deep space, away from any type of mass shadow, creates the illusion that deep space is free of gravity.

The volume-density factor thus explains why diffuse deep space collections of dark matter remain dark to our eyes and instruments. Kinetic energy would detectably light up dark matter anywhere it is sufficiently dense. Again, the actors are the same; only the densities differ.

Particles, strings and loops of particles flying through multiversal space are the same as electromagnetic particles flying through local

space. Push/shadow particles evenly and equally originate from all directions of the multiverse – whereas EM particles that we detect typically originate from discrete directions. From the perspective of multiversal totality, EM particles and gravity particles are equal. All are composed of various y/y particle combinations. We descriptively separate them into three "fundamental forces" only to help describe measurable phenomena.

In something as complex as white light, or even various solar source spectra, there are many frequency/wave elements that compose what we detect overall. We can spectrally isolate atomic elements down to high-frequency rays – but cannot get a spectral reading on waves and frequencies much smaller. Some newly generated, extremely-short-length strings, with their very high energies at very high temperatures, help push up net coronal temperatures into the several millions.

Whereas the cooler solar photosphere cannot directly inflame the corona to incredibly high temperatures – photospheric nanoflares inject immense amounts of kinetic energy in the form of larger ionic particles with high energy frequencies. Some of these larger masses physically interact with string-hosting gravitons enough to increase graviton vibrational frequencies sufficiently for more strings to fly off. Once liberated, many of these new particle strings have additional EM encounters, generating even shorter strings with higher vibrational/wave frequencies and temperatures. This chain reaction continues to distal regions of the corona.

Note that the change in coronal temperature does not just increase, as there is always a counter phenomenon of short strings combining and yielding lower-frequency temperature. Some of those "lower" temperatures could still be at or above one million Kelvin.

Coronal heating therefore offers us the best way to deductively witness short particle strings in action through indirect temperature measurement. Subtracting out all the frequencies that we can measure in the distal corona leaves us short of our highest overall energy/temperature mark. Factoring in ultra-short frequencies within the solar corona completes the temperature elevation picture, and enlightens us as to the true nature of ordinarily dark matter.

Think about our solar coronal energy soup when you next enjoy a total solar eclipse. An envisioned solar eclipse is even more marvelous than what we can see from the visual and measurable spectra alone.

"When you have eliminated the impossible,
whatever remains, however improbable,
must be the truth."

Arthur Conan Doyle[39]

[39] https://www.brainyquote.com/quotes/quotes/a/arthurcona139299.html