

Solar Neutrinos and Photons

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Abstract

Six years ago I published a major essay on how our beautiful and ethereal solar corona is many times hotter than the photospheric surface of its sun. The coronal heating puzzle today persists among astrophysicists, despite increasing hard data. Photospheric surface temperatures are only about 9,900 degrees Fahrenheit. Coronal temperature is typically about 1.8 to 4.0 million degrees F, and even hotter, but from where? Ideas about magnetic interactions among solar neutrinos and photons within the corona help describe, but do not fully explain, what is going on. This essay is a needed update for my seminal 2017 essay referenced herein. My updated coronal heating model remains the only one that elegantly explains this hot astrophysics puzzle.

We often do not perceive at first the most obvious things, and sometimes can never directly see them. Sherlock Holmes (A. C. Doyle) said: "When you have eliminated the impossible, whatever remains, however improbable, must be the truth."

The persisting puzzle as to why our solar corona is so much hotter than the surface of its local star does not clearly resolve for today's astrophysics community. Virtually unnoticed, I resolved and published in 2017 what is going on in that realm. It is essential that you [now read what I wrote then](#), so that you can understand what is additionally explained herein.

Experimental physics alone cannot crack the *full dimensional puzzle* using antique paradigms. I have given new light to a phenomenon, some hints of which are recorded by our best astrophysical temperature sensors, that nevertheless remains *unresolved by dimensionally limited data*.

Our sun is technically a medium-sized dwarf, main-sequence star with a moderate, pre-nova lifespan of about ten billion years. Its frequency spectrum radiates above and below yellow, and is reflected in our evolved natural ability to see its primary band of visual frequencies.

Stars much brighter toward the blue frequencies burn out much sooner, some in only ten million Earth years. Dim white and red dwarf stars can persist longer than our recognizable visible universe. (It is possible that some of the dim stars we see now were born in the local universal space our current visible universe occupies.) All sorts of medium-bright stars should have some sort of hot stellar corona, because coronal heating engines are likely similar in all medium-bright stars.

[The inspiration behind this updated essay came from a recent discussion of solar neutrinos.](#) Most of the billions of neutrinos passing through our bodies at any second come from the sun. A smaller percentage come from outside our solar system, from other neutrino sources mostly in the local universe, and even omnidirectionally from the full 4D multiverse.

Solar neutrinos from our sun that penetrate our squishy bodies undetected can equally pass effortlessly through the entire Earth. Currently, ghostlike [neutrinos are the smallest particles we can roughly measure and produce with special colliders.](#) Despite their great abundance, magnetically neutral neutrinos are generally a mystery in the big picture.

The neutrino discussion linked first above has experimental evidence that suggests neutral neutrinos can interact with neutral electromagnetic "quanta" known as photons under certain field

conditions. Vast and strong dipolar magnetic electron streams within the coronal environment satisfy that requirement – along with Planck-scale [Coulombic](#) forces.

The experimental stage is now set for explaining the coronal heating puzzle. However, the authors just above admit they still don't understand coronal heating within the magnetic particle-to-particle relatively large dimensions they model.

Dimensional Quantity and Quality

It is important to appreciate just how limited are our actual and potential tools for measuring all of the dimensional cosmos. We do very well making *as-if theory* within dimensions near our own, and within [our intellectual cloud castles](#). We can explore small dimensional distances beyond seemingly verifiable data by extrapolations of what we can apparently verify. Nevertheless, the more we extrapolate along the full electromagnetic spectrum, in either direction from natural visual, the weaker becomes our math sigma verification.

Astrophysics has verified a vast population of solar neutrinos second only to recognizable photons within the apparently ethereal corona. The entire corona is variously hot and bright on an individual particle basis, but is only about 1/10,000th as dense as the cooler photosphere.

There is a large population of high-frequency and high heat energy coronal photons that are not measurable by current technology, except indirectly by their heat. Many of the relatively short-beaded photonic strings are mislabeled as "dark photons," but they are actually too bright to measure with our instruments! The overall high temperatures we measure are thereby just an average of measurable and unmeasurable photonic quanta in the corona. In other words, individual dark photons can be very bright and hot, even while visible frequencies in the mix are not.

Both photons and neutrinos are electromagnetically neutral until they interact, still obeying the law of conservation of energy and matter. Whereas photons and electrons are fundamentally composed of normally neutral yin/yang spheres, their dialectical structures are different in size and shape – which helps explain how electrons are dipolar, while neutrinos, photons, and neutrons are neutral. Dual particle interaction are the start of our journey toward seminal discovery, not the end point. One or two pieces of a puzzle, with no elegant and comprehensive paradigm in hand, rarely complete the puzzle itself, even with extrapolation.

Consider the full electromagnetic (EM) spectrum: It is defined by frequency and energy. The shortest frequency waves yield the greatest energies. The longest frequencies have less heat energy per frequency wave. Detectable frequencies that we humans appreciate are clustered around what our yellow star produces, which works just fine for antique physics and astrophysics.

Frequencies above visible violet are only somewhat visible with instruments toward the gamma and cosmic rays. Skin sunburns bear witness to the effects of more energetic ultraviolet (UV) waves. Frequencies below visible red start with three levels of infrared (only the near and middle levels of which are now visible by the great JWST). All of the additional frequencies detected (and detectable) by experimental physicists are just a short relative journey into what is beyond in either direction along linear wave dimensions, typically expressed as powers of ten dimensional meters. Humans mostly inhabit our arbitrarily designated zero or first linear logarithmic dimension.

Neutrinos are elusive, but they still respond to misunderstood net gravitational forces. Neutrinos and photons both have some matter (mass) to go with their greater energy. Estimates of the size of individual neutrinos is about 10 to the minus 24th power of meters, or $10e^{-24}m$, or $10^{-24}m$. That's three ways of saying the same size. Small indeed are neutrinos: Quarks in the atto dimension are about $10^{-18}m$, with protons and neutrons in the $10^{-15}m$ range, and atoms about $10^{-14}m$.

Consider that the everyday world of humans is around the arbitrary zero starting point of this logarithmic size and time scale, or about $10e-1m$ to $10e0m$. That means we human apes are about 14 logarithmic linear dimensions larger than an atom, and 24 dimensions larger than individual neutrinos. This big size difference, along with their neutral charge, explains how very fast neutrinos can zip through the Earth's baryonic matter unhindered.

In pure math we can *as-if* model the smallest *math dimension* approaching the infinite minus dimension. Early ideas of our local big bang absurdly modeled compression toward zero point size. However, most likely the *smallest particulate dimension* hosts theorized 20th-century quanta with quantum pushback; or 21st-century yin/yang spherical EM quanta.

The great Max Planck estimated the smallest dimension we could ever measure to be below $10^{-35}m$. Below that level is the seemingly *chaotic realm of quanta* expressing weirdness that modern science loves to explore with modest success. Negative 35th meters dimension is not yet the very smallest physical size, as so-called quanta only need to be about $10^{-38}m$, AND in the form of spherical yin/yang particles with Coulombic virtual shells. *From these smallest matter/energy units the entire 4D universe of universes is dialectically organized.* Simply amazing!

Consider again that single humans are about 14 linear logarithmic dimensions larger than atoms, and 24 dimensions larger than neutrinos. By comparison *individual yin/yang foundational particles are about 14 dimensions smaller than neutrinos, which yields about 38 dimensions smaller than individual humans.* There is an immense realm of physics possibilities at the dimensional floor, even inside one person:

"There's plenty of room at the bottom."

Richard P. Feynman
"The Quotable Feynman", p.312,
Princeton University Press

Consider further that neutrinos eventually power their way out of the deep sun, along with different photons, following fusion physics deep inside. Also, multiversal “yin/yang gravity particles” can pass both ways through black hole virtual event horizons as if they do not exist.

Yin/yang particles *and* slightly larger cohesive “*gravitons*” constitute the essence of correctly modeled omnidirectional, multiversal, push/shadow net gravity. (This new model is quite evolved away from the early Fatio and LeSage net push/shadow ideas.) Particles without high linear velocity also constitute the essence of so-called quantum foam – which is populated mostly by very fast, equally small, multiversal yin/yang “quanta.”

We are not talking about absurd General Relativity “attracting tractor beams” along spacetime gravity slopes, which were fine for *correlating* 1915 theory. The 20th-century effort to sneak back into gravity models the disproven essence of ethers is no longer persuasive, thanks to much newer experimental data which I have documented previously. We are now envisioning a 21st-century correct revision of prematurely discarded *causal* push/shadow net gravity, which [I was the first to articulate](#).

Even though experimental science has made strides since the early and mid-20th century, this is not to say that even quality data extrapolated from within the atto dimension is now sufficient to characterize near-Planck dimensions twenty times smaller:

The 2023 Nobel Prize in Physics [has just been awarded](#) to worthy scientists who captured blurry images of electrons in orbit inside their own atoms. Their 12 attoseconds blurry data was achieved with lasers and other very new tools, as explained in [this link](#). By comparison, a single electron takes about 150 attoseconds to make one orbit around its atomic core.

Nevertheless, these blurry “atto” images only go down to the negative 18th meter linear dimension, which is about where busy quarks, gluons, and primary EM (the strong force) reside inside

atomic cores. Electrons are more elusive, being small and of low mass, with high orbital velocity. Still, the new Nobel data only moves verifiability slightly down old data paths without revealing new causal theory. Improving *quantitative* data does potentially offer possibly new quality applications in medicine and other sciences, with creative extrapolations.

Atoms and electrons are, from the perspective of their energy and physical bases, *emergent* energy/matter structures, vital to constructing even larger structures. We are talking about "atomic construction bricks," but not yet about the *dialectical* yin/yang elements composing those bricks. From a working experimental perspective it is OK to focus on reality's atto-dimensional first floor, and generally overlook for now the elemental sub-Planck real foundation unseen below that first floor.

My paradigm focuses on the foundation first, which is logically and existentially necessary. The atto *linear dimension* is at $10e-18m$. An *attosecond time unit* is $10e-18$ second. By comparison, the sub-Planck linear realm of yin/yang Coulombic matter/energy fundamental units is about $10e-38m$.

Twenty dimensions of ten is numerically almost equal to the difference between atomic electrons and the scientists who measure them. That's a huge amount of dimensional space for envisioning inside new physics.

Something else that is very interesting and significant emerges from the newest Nobel data: Starting in the 1930s, quantum theory began from Max Planck's 1900 radiation law of quantum units, and thus has developed the physics of Quantum Mechanics (QM).

It wasn't long before a "better" version of quantum theory (QT) arose to challenge the early models. The early formulations were still in part beholden to the classical model of particle physics. Newer math formulations emphasize fields over points, to where quantum field theory (QFT) is dominant in much of academia.

Extreme field theory claims to be allied with General Relativity (GR) and with 2D string theory, including the crazy model of 2D hologram universal structures in M-Theory's 10^{500} math dimensions. Contrast that exponent for *entire universes* with the estimated number of real *hydrogen atoms* in our visible universe, which is about 10^{75} . There comes a universal point much earlier where even the slickest extreme algebra models fail to pass the smell test, and such proof equations prove nothing real.

The new atto data sets puncture the myth of 2D field theory by proving that electrons are dimensional magnetic objects rapidly orbiting their core, not just probability field smears. *A smeary image of a real object in motion is NOT the same as a statistical field smear.*

Smeary 12 attoseconds images are like regular camera images with an insufficiently fast shutter speed. Therefore, *the newest atto-scale data do fit very well within the emerging 21st-century physics paradigm I have proposed, where Quantum Theory and the Standard Model of Particle Physics can be partially reconciled.*

Solar Neutrinos and Photons in the Corona

Here's how solar neutrinos interact with coronal photons to heat up the coronal environment:

I have in 2017 provided pieces of the evidence for my EM paradigm. In this section I stitch together additional model elements to provide a better logical and sensible picture.

Our sun is a gigantic thermonuclear furnace. Its deepest regions have temperatures approaching those of the extended corona. Super coronal heating is not a statistical fluke, but a *feature* of what is also going on elsewhere among the stars.

The photospheric surface of the sun is only about 9,000 degrees F. What has continually and continuously happened to synergize the million-plus degrees below and above?

I recently explained [why some synchronized compressions produce black holes, and only a very few produce actual big bangs](#). *The answer is in the cohesive Coulombic electromagnetic spheres around each yin/yang fundamental "quantum."* Such spheres could be envisioned as similar to the event horizons around black holes. However, the differences far outnumber the similarities.

When stars such as ours become novae they are in ways similar to (but weaker than) the formation of black holes, or neutron stars, including pulsars. When synchronized gravity compression is much greater from more massive stars, a less common supernova may emerge that essentially blows up, and often leaves a black hole. This next level of transformation is in some ways similar to what happens as a new big bang emerges. Still, even a supernova does not nearly have sufficient implosive power to give birth to a new big bang by itself.

Within the core of our sun atomic hydrogen is created from helium atoms under pressures that separate and release photonic energy. That's what happens with hydrogen bombs. Atomic bombs, by comparison, only split larger atoms, such as Uranium 235, liberating much less bond energy – and no release of primal energy happens from broken yin/yang Coulombic spheres.

The amount of energy required to generate a genuine new big bang can *only* be generated when sufficiently large numbers of yin/yang spheres are crushed together by symmetrical and accelerating extreme push-gravity forces at the same time and place. In other words, there is not enough compressive energy anywhere in a typical solar system to make a big bang. However, the per-particle latent energy perennially persists inside each yin/yang particle, ready to respond to a sufficiently extreme gravity attack on its Coulombic electromagnetic shield.

["There is enough energy in a single cubic meter of space to boil all the oceans in the world."](#) This Feynman quote poetically points to the wave and heat energy beyond ordinary theory, but is there

waiting to be released. Quantum theorists speak of *quantum foam*, and there are enough "yin/yang foam quanta" in a cubic meter randomly bouncing around like Einstein's [Brownian Motion](#) to slightly hint at this great potential.

Imagine all the *potential energy waiting to be released as kinetic energy* when so much matter/energy is concentrated just before the crowded but separate yin/yang Coulombic spheres are collectively crushed, creating a big bang.

As exciting as it is to envision the birth of a new local universe, much less drama is required to heat one extended stellar corona to several million degrees. The solar heating question simplifies to what is the *controlled* "ethereal" granular heating mechanism.

In one sense the greatest dimensional difference between neutrinos and yin/yang spheres is *penetration ability*. Neutrinos at negative 24 metric dimensions can easily zip through the Earth and less dense parts of the sun itself. Very short "dark" photonic strings with high velocity can penetrate black hole singularities, and almost ignore the central mass. Individual "gravity" yin/yang multiversal yin/yang spheres should be able to penetrate all but the most dense black hole cores, and into and out of black hole event horizons.

Thinking about our corona again, neutrinos emerge from the inner sun into the corona. Some of them will end up at Earth, but most won't reach the distant Earth. Some solar photons will reach our eyes, and the ones we actually see as light will be sufficiently long beaded strings to not penetrate us, just stimulate our retinas, and nourish life itself.

None of the medium-long "visual photon strings" leaving the photosphere are responsible for the solar corona reaching several million degrees – as long as they retain intact with their longer waves and lower-energy frequencies.

Corona-heating photons are very short strands that typically snap off from neutrinos that act as graviton bases with "photon spikes." Neutrino spikes are strands of yin/yang beaded strings in a pre-photonic phase, attached by their proximal sphere to the graviton base's proximal sphere. It is only when a waving strand is sufficiently shaken, or just knocked off its base, does that individual photonic strand escape at "c," which I first explained years ago.

Any bead strand that escapes with a very short bead count will escape at *the same snap-back speed* as any longer strand does. The difference among photon strings is in their wave frequencies, not in their initial vacuum velocity. *Wave frequency and energy (read heat) are directly related.*

THEREFORE, when a very short particle wave appears in the corona, or even intersects and splits another longer photon string into a very-short, very-high-frequency "dark photon" – higher energy and higher temperatures are released. *The sum total of all such boosts yields aggregate temperatures within the solar corona much higher than within the photosphere – and with much greater net heating effect than from short chromosphere spicule heat eruptions near the photosphere.*

The creation of extremely hot short photonic strings does not require the crushing of any Coulombic shields. Heat energy to transform the corona only comes from breaking enough y/y–sphere–to–y/y–sphere beaded primary EM adhesions, yielding short strands from long strands. In brief, this form of heat energy release is thus very common – while the creation of big bangs from crushed Coulombic sphere shields is extremely rare.

It is logical to assume that most if not all main sequence stars similar to our own will have similar super-hot coronas. Physics anywhere in the 4D multiverse should be similar to physics anywhere else. Any unified physics paradigm worth considering seriously will likewise be consistent from the smallest sub-Planck regions, to the largest scales of the 4D multiverse.

Solar coronal heating is one more experimental path toward understanding how energy and matter are unified, even though they can appear very different. The coronal arena is also yet another avenue to help us harmonize our ideas of classical and quantum physics.

