

Photoelectricity and Absolute Zero

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Abstract

Photoelectricity and the real Absolute Zero have long been known to be somehow associated, but have not yet been understood together within one elegant physics model. This essay sets forth a consistent model that explains their actual relationship, with broader physics ramifications.

In the 19th century both photoelectricity and absolute zero were explored. In 1921 Einstein won his Nobel for showing how photons were both wave and particle phenomena. After Einstein helped establish quantum theory (QT), there soon emerged dual quantum theories of quantum mechanics (QM) and quantum field theory (QFT).

Quantum entanglement challenged Einstein who referred to such entangled action at a distance as spooky. On their part, emerging QFT developers embraced a General Relativity (GR) spacetime variant of 2D sheets and branes – placing the presence of point quanta at the intersection of vast numbers of 2D sheets. This jumble of multilingual theories has led to full employment for leading QT and GR physicists, and puzzlement for everybody else craving to know what sort of real (or unreal) visual universe or universes we all inhabit.

This essay points to some key aspects of a comprehensive theory, represented here by photoelectricity and absolute-zero physics. The newly emerging 21st century model in its full form also illuminates common mysteries such as [2D space sheets](#) for vast numbers of separate universes; [nonexistent dark energy](#); [existent dark matter](#); [not-inscrutable black holes](#); plus [multiversal push/shadow 4D “quantum” gravity](#).

Absolute Zero

The finest example of today’s experimental astronomy may be the very successful design and deployment of the James Webb Space Telescope (JWST). This \$10-billion-dollar triumph of experimental and theoretical physics owes much to Newton and creative math algebras, and less to QT/GR physics.

As with most of the finest astrophysical science, it has been sufficient to refine our tools to precisely [correlate](#) with what we hardly understand causally, even though we imagine otherwise. This type of Big Science may be fundamentally absurd, but it works up to a point. I for one am really looking forward to what the new JWST will reveal to humanity, having become an amateur astronomer and Newtonian telescope owner when I was ten.

Part of the spectrum-seeing power that the JWST has is from [cryogenically cooled instruments](#) needed to reach certain infrared frequencies that are not available to the warmer Hubble. The problem with capturing certain long frequencies in high resolution involves the simple fact that an instrument, if not sufficiently cooled, will give off enough infrared radiation to defeat the data flow. Once the [instruments are cooled sufficiently](#) (and they just have been) it will be time to do some amazing longer-wave astrophotography. What does this have to do with Absolute Zero? Even though the key instrument will be close to Absolute Zero, it still is above the [zero degrees Kelvin](#) mark. Indeed, the very coldest object ever located in space is the Boomerang Nebula, which is down to one degree K.

How was so-called Absolute Zero originally calculated? In the 19th century [Lord Kelvin](#) had no access to modern instruments. What he did have was the apparent progression among cooling gasses that brought all of their different freezing points very close to the same number of today. His quite accurate conclusion in 1848 was even more brilliant, as he had no clarity of sub-Planck physical dimensions and no advanced microscopes, or how photoelectricity works at the sub-Planck level.

Nevertheless, we have not reached the **real** Absolute Zero just by reaching the point where molecular motion and gas expansion pressure stops. Let us now back up a bit to go over basics as science now understands them, and then we will return to what really goes on when currently unmeasurable photon frequencies appear far below so-called Absolute Zero.

Photoelectricity and Beyond

Einstein's Nobel Prize winning discovery was to show how the dual wave-particle nature of light and electrons reveals that photons are not mere wave functions alone, but also particles. Here is how [Wikipedia](#) describes his great discovery:

The **photoelectric effect** is the emission of [electrons](#) when [electromagnetic radiation](#), such as [light](#), hits a material. Electrons emitted in this manner are called photoelectrons. The phenomenon is studied in [condensed matter physics](#), and [solid state](#) and [quantum chemistry](#) to draw inferences about the properties of atoms, molecules and solids. The effect has found use in [electronic devices](#) specialized for light detection and precisely timed electron emission.

The experimental results disagree with [classical electromagnetism](#), which predicts that continuous light waves transfer [energy](#) to electrons, which would then be emitted when they accumulate enough energy. An

alteration in the [intensity](#) of light would theoretically change the [kinetic energy](#) of the emitted electrons, with sufficiently dim light resulting in a delayed emission.

The experimental results instead show that electrons are dislodged only when the light exceeds a certain [frequency](#)—regardless of the light's intensity or duration of exposure. Because a low-frequency beam at a high intensity could not build up the energy required to produce photoelectrons, as it would have if light's energy were coming from a continuous wave, [Albert Einstein](#) proposed that a beam of light is not a [wave](#) propagating through space, but a swarm of discrete energy packets, known as [photons](#).

I have previously and elegantly explained the cause of how the [speed of photons in a vacuum](#), from the relative perspective of the photon's original source, is always "c". Up until my causal explanation, weak and incorrect physics models have never explained precisely how correlating "c" is just what it is. Should you not choose to click on blue links to my first and other photon-generation essays, I hereby present a brief explanation:

First, we need to understand how real "strings" have both energy and mass, and are not 2D, which is impossible except in idealistic Platonic models. Likewise, perverse ideas, including 2D holograms on the inside of black-hole event horizons, are corrupt solutions to the problem of preserving universal information.

[Real strings are more like bead strands](#), where 3D yin/yang spheres mutually adhere. Inside each fundamental yin/yang sphere (the real base unit for quanta) there is what I call primary EM. Such electricity is just the co-existence of plus and minus charges, which are secondary EM. Beads, and subsequent bead strands, and even more complex collections from which "beaded photons" launch are the primary building blocks of all that we can measure in our visible universe, even up to the structure of [the 4D multiverse](#). Yes, there are quantum-like y/y swarms in space.

Yin/yang spheres are able to stretch only to precise degrees, and then they all snap back at the same "c" rate to restore [Coulombic spheres](#). They have the ability to detach individually, or as adhering strings of different lengths, upon sufficient vibration or impact – always together snapping away at "c" velocity; and the previously attaching base y/y returns likewise.

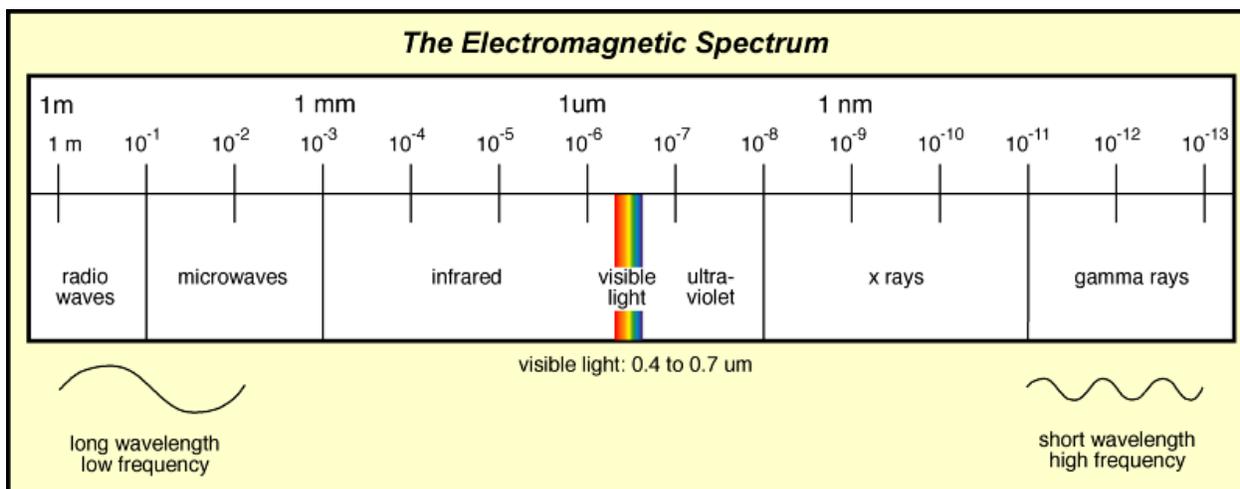
Einstein observed on a visible scale *many* dimensions larger than the primary realm of real fundamental particles. He saw the collective result of individual kinetic impacts and electromagnetic (EM) encounters within flows of individual yin/yang particles, and strings or loops arriving omnidirectionally from within the real 4D multiverse.

When strings attached to their base are impacted either kinetically or photo-magnetically they either stretch and snap back to their original position – or they break off and form new beaded-string photons and other structures such as electrons.

The new EM strings vary in their spin frequencies according to their beaded lengths. It is the rate of snapping back within the launching string of adhering y/y beads that establishes the same precise "c" velocity within a vacuum. Only the last y/y particle detaches from its base, as all other escaping string particles stay attached to each other, simultaneously returning to Coulombic spheres, or nearly so. This process in vast numbers generates EM spinning frequencies determined by the length of escaping strings. Some of these we can see, but most we cannot.

This "birthing" process also establishes the photonic wave, or frequency. The shorter the impacting strings are, the more kinetic are their higher rotational frequencies, which were established at their initial launching from anywhere in the 4D multiverse.

In this way, even though all photon strings travel in a vacuum at "c," their frequency energies are different. The "quantum sea" hosts vast numbers of everything fundamental from individual y/y



spheres to very long strings. Higher frequency short strings with more energy can dislodge shorter strings (also called quanta).

Longer strings that Einstein could measure as recognizable light frequencies represent only a tiny segment of the full electromagnetic spectrum, and they can be dislodged with lower frequency energies.

Yes, it is not the gross flow, but the individual string-quanta of kinetic energy at work within that flow that support his Nobel quantum wave-particle conclusion.

Here above is a [chart](#) that illustrates the strong differences in wave lengths and frequency energies found just within the observable EM spectrum available to Einstein. Note that gamma rays, being very short and very energetic, are as short as 10^{-13} m. This chart does not properly represent the profound differences, as logarithmic distinctions visually appear for viewing convenience as if they were linear distances.

By contrast, yin/yang beaded strings can be as short as 10^{-36} m, or some *23 logarithmic dimensions* smaller than "short" gamma rays, and [vastly more powerful](#) when they kick off very short new strings. The full EM spectrum is not available to our instruments, BUT this full physics reality is still there, and as yet unexplained and unexplored, even by Einstein.

In conclusion: Experimental physics reveals instrumentally approaching what has been called Absolute Zero works well when we are talking about detectable photon strings. In a practical sense, as with the new JWST, it is good enough to approach Lord Kelvin's molecular zero point, because sensitive infrared signals are not distorted by disrupting heat waves flowing out from insufficiently cold detectors.

Nevertheless, knowing that there is much y/y quantum string movement below Kelvin's zero temperature opens the door to new science that can only point toward the real Absolute Zero (which may not exist) for isolated yin/yang spheres.

Interestingly, the primary EM Coulombic forces inside individual y/y energy/matter spheres are immense – even while juxtaposed external secondary EM forces are also immense, but less so.

Individual y/y quanta floating randomly (at "c"; or at any lesser velocity) within the quantum sea can thus have no external temperature that we can measure – while internally also having the highest potential level of energy/temperature anywhere.

Emerging theory inspires new experimental science – and new experimental science yields new theory – all of which is good for intellectual progress, and for the possible survival of our hubristic species.

“The absence of evidence is not the evidence of absence.”

— Carl Sagan, [Cosmos](#)