Faster Dark Energy?

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ABSTRACT

The Hubble tension between the early and late local universe is an active topic in cosmology. Recently revealed discrepancy between the Planck and Hubble numbers for our visible universe's age appears to be from two high-quality data sets competing for one Hubble constant answer. No unified Hubble constant has been derived, because there are both the initial BB expansion forces PLUS the increasing net shadow attraction to great matter just beyond our expansion bubble. To clearly understand apparent Dark Energy, we must also understand the adjacent Multiverse.

"The Hubble tension between the early and late Universe may be the most exciting development in cosmology in decades," said astrophysicist Adam Riess of the Space Telescope Science Institute (STScI) and Johns Hopkins University.[1]

Home telescopes reveal to our eyes what looks like a static sky. However, even beginner amateur astronomers know that seemingly stationary deep sky objects can move about more rapidly within their own frames of reference than do our moon and planets. Cosmological distance thereby gives us the illusion of permanent deep-sky placement inside constellations.

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[1] https://www.sciencealert.com/new-measurements-of-the-expansion-of-the-universe-confirm-something-is-definitely-awry

It is one thing to visually track lateral planetary movement. It is quite another task to detect *radial expansion* where very distant objects apparently "stay in one position" while rapidly moving away from us. Detecting radial movement requires different tools essentially built around the Doppler wave phenomenon.

Until recently it seemed that we knew from precise Planck space observatory measurements of the early universe's Cosmic Microwave Background that the visible universe's radius is 13.6 to 13.8 billion light years. Now we have newer late-universe Hubble telescope data of distant cepheid variables indicating our visible universe is 12.5 to 13.0 billion Earth years.[2] This latest data from a less deep (from us) and therefore later region of space tests the foundation of the Hubble expansion "constant." When discussing a visible universe many billion years old, what's another billion Earth years more or less? Actually, *it's a BIG DEAL*; and thus our story begins:

The architecture of the cosmos didn't start to be any type of big deal until the 17th century when Galileo discovered with a recently invented telescope the phases of Venus.[3] His views at 30x showed how Earth's humans are apparently living inside a values-neutral heliocentric universe – not at the center of a cozy anthropocentric, geocentric universe ruled by attentive sky gods. His simple scientific discovery challenged structural-functional, theocratic, 17th-century Europe.

Pushing our personal gods out of the immediate skies was theo-politically very dangerous. Experimental scientists and dissonant visionaries in those times were subject to persecution or burning at the stake by defenders of superstition and fear.

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[2] https://www.insider.com/universe-younger-expanding-faster-than-thought-study-new-physics-2019-4

[3] https://brunelleschi.imss.fi.it/esplora/cannocchiale/dswmedia/simula/esimula1_3_st.html

Copernicus, the great 16th-century Polish heliocentrist, was already naturally dead before Galileo.

The Ptolemaic "causal" orbital model had been around since ancient Rome. It *correlated* so well with what we see that even Galileo's initial telescopic discovery of Jupiter's moons could not break that model. In contrast, the newly revealed phases of Venus were a *different correlation* that superseded Ptolemy. The Venusian correlation appeared to point toward another, *more accurate astrophysics causal paradigm* that verified Copernicus.[4]

In the late 17th century Newton put the old geocentric idea to rest with his location-neutral universal laws. Newton's so-called physical laws were general math correlations with wide potential applications anywhere. It was up to Einstein and others in the early 20th century to introduce Relativistic, accelerating, vector geometry into the tidy Newtonian world.

Albert Einstein and others a century ago could not causally prove his geometric General Relativity paradigm: We now know that both the Mercury precession question, and the bending of light around the sun have equal or superior explanations.[5] GPS math is suspect, because there is a non-funnel explanation.[6] Furthermore, the famous LIGO detection of "gravity waves" can be well explained as de Broglie-Bohm bow waves.[7]

The primary reason for Einstein's fundamental error was insufficient conceptual curiosity about how all photons with different frequencies *in a vacuum* initially achieve the same terminal velocity.[8]

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

5 http://astronomy-links.net/Quanta.and.General.Relativity.pdf

6 http://astronomy-links.net/LightSpeed.pdf [pages 15-16]

7 http://astronomy-links.net/LIGO.and.GR.pdf

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

The problem with heliocentrism, and likewise with the idea of one universe, is that our ordinary sun is just one of stellar billions inside the Milky Way, and just one of stellar trillions inside the visible universe within billions of other galaxies, all of which have net gravity fields. Such cosmological vastness was conceptually unknown to astronomical science in Galileo's day – and still unknown to the 1915 Einstein, when the Andromeda galaxy was still considered to be a "spiral nebula."

Because the then-unverifiable idea of a 4D multiverse seemed too weird to take seriously, Einstein and his associates modeled a single-universe. One hundred years later we can clearly say that Einstein's geometric GR model *is to* the 4D multiverse – *as* Ptolemy's geocentric model *was to* Galileo's heliocentric universe.

Three centuries after Galileo, astronomy has revealed that our sun revolves once around the rotating Milky Way galaxy every quarter billion Earth years. We have also discovered through Doppler light-wave studies that our "local group" of galaxies is gravitationally a distant part of the nearest supercluster centered behind our Virgo constellation, and that we locals are moving there over many billions of years from net push/shadow gravity.

The Virgo supercluster itself gravitationally interacts with other equally great superclusters and dark matter collections to make up what we conveniently model as our singular universe. Our supercluster's relationship with other such accumulations of mass cannot be explained by crude GR, but is clearly understood within the push/shadow model on that scale.[9]

The seductive beauty of Einstein's idea of gravity vortex slopes becomes absurd in a jumble of uncountable sub-universal slopes. Furthermore, both Newton and Einstein did not place distance limits on the reach of their gravities, leading to distant upper vortex slopes that approach horizontality. In contrast, the idea of

[9] http://astronomy-links.net/DipoleRepellerExplained.pdf

modern push/shadow net gravity is more realistic and local for structures of all sizes within both the universe and multiverse.

Above the net sub-universal vectors, our post-BB universal sphere itself is radially and linearly expanding. The boundary questions of "from where" and "to where" are most eloquently answered within the multiversal community of local universes.

Therefore, why stop at our visible universe's hypothesized boundaries? There is a growing minority body of physics theory and data suggesting that some very massive entities may be juxtaposed with our visible universe's outer limits.

The vast multiverse of huge energy/mass entities includes our local universe's membership as one "bubble" within the bubble-bath-like, four-dimensional universe of universes. Just as other universal mass bubbles are gravitationally outside ours, our local "bubble" mass is likewise gravitationally outside juxtaposed others. What universes are inside and what are outside, if so, is another perspective using real relativity, not just Relativity.

It is possible that the total multiverse has no finitude, either in distance or time. Because a lesser cannot envelop a greater, there is no way to *deductively* test this hypothesis – but the idea is elegant and therefore worthy of contemplation *and* competition with fuzzy singular-universe models. The perpetually recursive idea potentially inspires some amazing *inductive* astrophysics.

A 4D multiversal vector relationship opens the door for a 21st century version of the only elegant gravity theory. There is no logical room inside the new 4D multiverse paradigm for 1915-era rubber-sheets geometric gravity; or for one-way expansive forces radiating seemingly from nowhere except metaphysical God.

Push/shadow *gravity is a differential push force that seemingly works like a pure attracting force, such as attracting tractor beams between and among geometrical branes. The pushing aspect of push/shadow is multiversally omnidirectional, and the*

gravity is a nearby shadow effect. Ironically, recently theorized "dark energy" and proposed expansive radiation seemingly operate as repulsive forces, not as stringy tractor beams.[10]

Einstein's absolutist idea of equating vector time and vacuum light speed is rendered irrelevant within a recycling multiverse of seemingly infinite time and space. Nevertheless, visualizing time with measurable electromagnetism is for now our best available experimental tool, using the idea of discrete points of reference. From the overall multiversal perspective of all potential observers there are no preferential points of reference.

There are beautiful mathematical string multiverses, with tractor inter-brane beams, and vastly more than four dimensions, normalizing "solutions" to their wrong-paradigm equations. Because real causation is impossible to demonstrate within string theory, absurd "advances" are only made by algebraic cleverness. Here is the *metaphysical basis of current cosmology*.[11]

None of this too-clever algebra holds up to the logical Law of Parsimony – nor do merely self-evident equations within tidy math theories satisfy the great Kurt Gödel's disproof of self-proofs within any mathematical system. Prestigious cosmology awards given out for this goofy stuff are like the blind awarding other equally blind people for their clear vision.

Clever models and "normalizing" equations can appear to correlatively link diverse effects, so that experimentally measured individual events appear *with reverse engineering* (such as "lambda") to be causally related. Nevertheless, only correct and understandable physics models can correlate both actual causes and effects.

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[10] http://astronomy-links.net/GGvsGR.html

[11] http://astronomy-links.net/Religion.and.Math.pdf

The Hubble Expansion Model

The Hubble expansion model for our universe appeared about a decade after Einstein's geometric model of gravity.[12] Both Special Relativity (SR) and General Relativity (GR) seemingly support Hubble's vector measurements. There are also other ways to correlate with the Hubble model, but science has been happy with hallowed Relativity math since then. Experimental post-Big-Bang data appear to causally support GR, but not really, unless we cherry pick the facts. Ironically, it is the most recent data supplied by the Hubble Space Telescope (HST) that casts doubt on the gold-standard Hubble "constant."

Through much of the 20th century there was debate over the idea of a single steady-state universe *vs.* the Big Bang universe. The steady state universe is a senior model, but the Big Bang model was a more elegant outcome of the GR gravity model. Astronomer Edwin Hubble used data[13] in the 1920s from local cepheid variables to discover that cosmological objects are radially receding – which suggests an expanding universe, and which potentially challenges post-BB models modeling a Big Crunch many billions of Earth years from now.

The area behind the Cosmic Microwave Background (CMB) is the true alpha point of reference for our local big bang. However, visible photonic electromagnetism did not appear until the CMB appeared - so we see points of reference 380,000 Earth years more recent than the bang itself, but still very early in our post-BB universe. We humans may fancy that we are the best point of reference, but we are only at one later point looking inward toward earlier points.

By looking "back in time" and seeing accelerating expansion, we are actually measuring our own accelerating expansion. The

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[12] https://www.space.com/25179-hubble-constant.html

[13] https://www.cfa.harvard.edu/~dfabricant/huchra/hubble/

laws of physics work in both vector directions, like equations solvable from either side. Doppler light waves red shifted from older points of reference, such as ours – could equally be duplicated if there were an observer near the CMB looking at us being red shifted. That relative truth is highlighted by two sets of new experimental data as explained herein.

Einstein's 1915 GR equations did not work without his wave "lambda" fudge factor, which he first thought was a failure of his math. That lambda factor was replaced by Hubble's expansion vectors, and today we consider Einstein's fudge factor to be accidental genius – as well as a *flexible* fudge factor to give the desired outcome. It's euphemistically also called a "correction coefficient." Dark energy itself is a "correction coefficient."

An increasingly popular, and clearly defensible, astrophysical paradigm has our visible universe being within a transcending, potentially infinite, steady-state "bubble universe." That means the Big Bang we imagine as "the beginning" of it all was just "a beginning" inside our local region. There could have been other previous and similar BB universes in our local space within an expanding and contracting overall steady state. No fudge needed with this eloquent model, just a bit of poetic license.

The idea of eventual thermal equilibrium (the so-called Second Law of Thermodynamics) is furthermore doubtful and not worthy of being called a general law of physics within the renewing multiversal scale, even while it can somewhat apply locally.[14]

Therefore, what we see as an expanding universe could in fact be just one part of a universe that *metaphorically* breathes in and out. In other words, think of the multiversal universe as being the mass/energy totality, with cyclical local "universal" expansion and contraction as being the metaphorical breathing in and out.

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[14] http://astronomy-links.net/Universe.pdf [pages 6 and 7]

For those who crave intentional cosmology in the form of a personal eternal god, our visible universe could be *like* the virtual lungs of God – fascinating, but a little creepy, since that would make the Milky Way just another "cell" inside divinity's celestial body. In "space metaphysics" all things are possible, and religion is an empty vessel ready for filling by those able to advance their theological metaphysics and political agenda with fuzzy maths.

Even though this new metaphor is clearly superior to quaint Bronze Age ideas of personal gods hanging out in the clouds and on Mt. Olympus – there is an existential/ego problem with Earthlings becoming just one tiny part of a great whole, rather than being the favorite pets of a jealous God. At a certain distant point the greater universe has all sorts of sentient life forms – not just omnicidal hominids blindly sucking the life out of one briefly fortunate planet. Here we see why some theocratic societies have considered the science of astronomy to be heresy, preferring superstitious astrology to bewitch the flock for immediate gains.

There are at least three logically possible scenarios surrounding individual universe expansion: (1) a universe that expands forever, yielding a "big rip" followed by a "big freeze"; (2) a universe that expands and then returns, yielding a "big crunch" followed by another "big bounce"; and (3) a long linear expansion as part of reseeding the local multiverse region.

The third linear model has been supported as far as we can reasonably imagine by Doppler data associated with the Cosmic Microwave Background (CMB). It is also most logically associated with how a recycling bubble-bath multiverse works through (a) local big bangs, (b) expansion and *dissipation*, and (c) new crunches which gravitationally generate new big bangs here and there from new local universes, but over uncountable eons.

We could say any local bubble universe expands linearly to the point of dissipation and absorption by juxtaposed multiversal mass, which make the local bubble temporarily appear to be within the linear expansion scenario – but it's really within the

dynamic equilibrium of the multiversal totality. Any subsequent local universe that occupies our grid space will contain elements of many other dissipated local universes.

Some people find psychologically diminishing the very idea of a multiverse composed of multiple four-dimensional local universes following similar versions of the Standard Model. Nevertheless, experimental astrophysics increasingly validates something like an expansion of the Standard Model incorporating "classical elements" of quantum foam theory, rather than the truly weird string universe.

M-theory's version of string theory models as many as 10^500 logarithmic math universes, virtually guaranteeing somewhere else is a near duplicate of our own imaginary universe. (By stark comparison, the estimated number of abundant Hydrogen atoms in our visible universe is 10^80.) M-theory has justifiably inspired physics jokes, while strangely still enjoying intellectual status inside established physics communities trapped by a lack of *accepted* breakthrough theory. Fictional Dr. Sheldon Cooper rose to physics fame with string theory math.

Unique post-big-bang mass/energy universes within the 4D multiverse should each have their own local-universe "Hubble constant." Because there are additional mass "bubbles" around each local bubble in the multiversal bubble bath, there should be similar physics (only differing in dual expansion vectors) for all other local expansion phases.

Using last century's gravity model within any one of these multiversal local universes would reveal different local "lambda" mass expansion equations. Individual fudge factors would vary according to distance from the local primordial eruption of energy/matter. General Relativity equations are specific only to individual local bubble universes.

If the Hubble constant were to appear stable within our visible universe, because the end speed of local-universe expansion is

controlled by the initial conditions – then what would be the source of faster expansion closer to the outer edges? What objectivity has measurably changed in the intervening 13 billion years to warp the local Hubble constant?

Visualize the proverbial expanding bread loaf with raisins. All components originated from the historical universal expansion, so everybody everywhere could imagine they are at the center. We cannot all everywhere now be at the center of the universe, even though the radial expansion is similarly measured in all 3D directions.

Yes, "everywhere started out at the center," and I use that literally but loosely, as it's a long way from creative "explosion" to a human civilization. We are no longer at the center, having ridden the expanding loaf for many billions of years. All of us universal "raisins" are thereby nearly equally close to the push/shadow masses outside our universe's expanding boundary. This means that we should see an equal extra expansion coefficient in all directions, which is precisely what the Hubble just measured.

Ironically, when we look at the Doppler red-shifted CMB, which appears to rapidly recede, we are really looking back toward our origins, which just happens to be in all directions. It is actually we who are receding relative to the local bang. Think in terms of real universal relativity, not just the subset of singular big-bang relativity. The liberated mindset that can understand elegant real universal relativity is prepared to understand mutiversal relativity.

Experimental Planck science has essentially decided that our visibly expanding universe is four-dimensionally flat, and not curved in or out. If such is true, then there should be one Hubble constant for all distances. However, the most recent data point otherwise. The "measured Hubble constant" is the product of two or more great forces at different 4D distances.[15]

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[15] http://astronomy-links.net/Universe.pdf [page five]

It appears from the most recent Hubble telescope data that the visible universe is "younger" than previously thought, because the expansion coefficient at the greatest time distances (where we reside) is apparently increasing. We can mathematically try to get around this experimental evidence, using variants of unproven dark energy, or even the more recent idea of "radiant particulate energy." However, there is zero experimental evidence for dark energy or its radiant cousin, even though they are supposed to be three-quarters of everything in the universe!! This stale idea is very odd, and it cries out for a better model:

Deducing the Superior Model

> **There are three main suspects to explain these results, all of which delve into the realms of unknown physics. Dark energy could be thrusting galaxies apart more strongly than expected and with growing strength; dark matter may interact more strongly with normal matter than predicted; or previously unidentified subatomic particles ('dark radiation') may be responsible. Each of these scenarios would alter our models of the universe and lead to inconsistencies, resulting in incorrect values for the Hubble constant as inferred from observations.**[16]

If we are increasingly accelerating, then some additional post-BB forces are likely *pushing and/or net-pulling* us nearly equally in all radial directions. Instead of the entire visual universe just coasting in a vacuum after the initial expansion at a constant rate (the Hubble constant[17]), the more realistic universe's components are experiencing what appears to be a new force or forces unrelated to, or emerging from, our initial primal push.

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[16] https://cosmosmagazine.com/physics/new-physics-needed-to-explain-the-universe-study-finds

[17] https://www.cfa.harvard.edu/~dfabricant/huchra/hubble/

Dark energy theory speculates that this truly dark secondary and supplemental force magically increases its expansive pushing power over time – but expansion without any clear cause, especially the immense energy from unknown sources required to accelerate universal expansion defies laws of physics. Dark Energy will be metaphysics until the seemingly voodoo expansive source, if any, of the increased expansion factor in dark energy is identified. *Dark radiation* is the latest explanation without any foundation, but the theory is fun. Let's call dark energy what it is, the latest fudge factor.[18]

There is a much better model which has been mostly ignored or misunderstood by the entrenched physics community. It does not require voodoo expansive forces. It involves critical 21st-century multiversal improvements to the incorrect 17th-century idea of push/shadow gravity, including its 19th-century variants.

The result is a *correlating causative scenario* that behaves *AS IF* it were dark energy, or even newly hypothesized radiating subatomic particles.[19] The superior model also draws some from the standard model of particle physics, with improvements that are inspired by the better aspects of quantum theory. The new and superior model also has some unique elements:

Very briefly, individual multiversal yin/yang particles are in the 10^-37m sub-Planck realm, along with other collections of them such as bead-strings, or bead-rings. These units in vast numbers flow equally and omnidirectionally among all local universes, much like much larger low-energy solar neutrinos in the 10^-24m realm. Or they collect in dark matter clouds.

Extremely tiny fundamental yin/yang units could be envisioned as quanta without the silly Schrödinger cat-in-a-box existence. This is quite different from the quantum field theory idea of

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[18] https://www.abc.net.au/news/science/2016-06-03/dark-radiation-may-be-speeding-up-expansion-of-the-universe/7472074

[19] http://astronomy-links.net/Mystical.law.and.science.pdf

quantum foam. These yin/yang units could appear classical in attached 3D strings. (There is no such thing as absurd 2D or 1D strings, or even zero dimensional quantum points, except inside stringy math models, or idealized Euclidean plane geometry.) Coulombic EM forces don't compute at zero dimensions, but do even at extremely small three dimensions.

The Coulombic electromagnetic (EM) aspect of individual energy/mass spheres is internally *non-polar, and at sufficiently small yin/yang particle separations*. *Dipolar* EM can express at the ends when 3D wavy beaded strings act as classical strings within 4D environments. This is when we can measure electrical +/- poles.

Terminal speed of EM photons is determined by the separation and *snap-back time* of these somewhat elastic spheres from their base. In other words, the time for snapping back to original sphericity is the time it takes for the escaping beaded string to go from zero to terminal velocity. Factor in the distance for this to happen, and there is "c." This model explains how "c" in vacuums is the same everywhere, as spherical yin/yang units have equal elasticity everywhere. The observed frequency color of EM strings is a function of their length and wavelength. More key details of this foundational idea should be read here:[20]

Interpenetrating kinetic "gravity" particle strings do not have to be sub-Planck (below 10^-35m), just small enough to zip through and occasionally interact with much larger so-called fundamental particles (quarks, nucleons, electrons, etc.). Neutrinos (at about 10^-22m), are just collections of much smaller yin/yang truly fundamental matter/energy units. This construction applies to other so-called fundamental particles, which are not fundamental. Gravitational interaction with proximal mass objects combines electromagnetic forces and/or kinetic effects, with EM having a greater Coulombic effect very near particulate juxtaposition.

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

In general, the smaller and less energetic the neutrino, the greater its power to penetrate such masses as the Earth itself. High energy neutrinos present a larger profile, leading to their inability to deeply penetrate massive bodies. Instruments at the South Pole have supported this difference.

Quantum theorists are unknowingly referencing fundamental yin/yang units when they talk about universal quantum foam. More correctly, quantum foam identifies non-vector 3D yin/yang particles – not the 3D kinetic energy/matter string units that randomly zip around the multiverse, creating push/shadow gravity. Various manifestations of yin/yang foam also constitute the primary components of dark matter.

Some concentrated dark matter *could* be detected by other than its gravitational effects. *Dark matter that has high kinetic energy* is dark only to our currently insufficient instruments. Kinetic dark matter is electromagnetically very bright, but only at much higher wave frequencies than even gamma rays. This is because tumbling "dark" photon strings are much shorter than detectable EM, leading to much higher wave frequencies. Such individually bright yin/yang units have not been detected to date because they are typically both too small and diffuse to collect into visible clouds, or concentrate among baryonic matter.

On the other hand, a high percentage of dark matter is not kinetic, and it does not express photon waves at any frequency. When yin-expressive yin/yang particles float in diffuse suspension in space, and are not involved in the omnipresent multiversal "gravity" particle streams, such *potential energy particles* can gravitationally collect into great clouds either alone in space, or near structures such as galaxies. Such "gravity clouds" can even exist unseen inside galaxies.

Here is where ***primary EM*** also expresses as a repulsive force when near other primary units. It is only when one yin/yang tiny sphere touches another does Coulombic attraction override its

dual EM repulsion. A dynamic dance keeps random diffuse dark matter clouds from quickly collapsing into gravitational black holes that could collectively eat much of the multiverse.

Within the kinetic, omnidirectional, push aspect of gravity the ***yang-dominant primary particles*** *dominate. Within the local shadow aspect of push/shadow gravity the* ***yin-expressive mass particles*** *function as partially screening shadowing mass.*

I challenge the physics community to find and describe what we already know is there. As for the real "dark energy," we are talking about net push/shadow gravity within the multiverse, and not fumbling in the dark for mystical radiant and/or dark energies that don't independently exist. Out of nothing emerges nothing.

BOTTOM LINE

The recently revealed discrepancy between the Planck and Hubble numbers for our visible universe's age appears to be from two high-quality data sets competing for one Hubble constant answer. In truth, both excellent sets of data are valid, but only because they measure different distances from the original inflation. There is no one Hubble constant, because there are both the initial BB expansion forces PLUS the increasing shadow attraction to great matter just beyond our expansion bubble. In this case, experimental coexistence is better than competition.

The slower and earlier data associated with the central CMB come from an epoch when the boundaries of our expanding bubble were not as close to the adjacent, net-attracting, push/shadow multiversal masses.

Perhaps our local universe's initial inflation (the pre-photon era) was hyperluminal, expanding the local volume available for our universal expansion which is still ongoing. Initial plasma

energy could have pushed back most encroaching mass just outside our new universe bubble.

The most recent Hubble data points come from measurements of much closer cepheid variables. These latest Doppler wave measurements reflect the kinetic sum of the original push outward *PLUS* the growing net pull from the partially shadowed mass beyond.

We have just described a superior 21st-century paradigm for push/shadow gravity, both locally and within the multiverse.

Further applying Coulombic inverse-square electromagnetic forces at and near the smallest logarithmic dimensions allows science to build a functional paradigm that works from sub-Planck to multiversal scales. No other physics theory does that.