

Physics of Dark Energy

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This Dark Energy Physics is an integral part of the following analysis:
Common 3D Physics Depicts Universe Emerging From Chaos

And includes the Physics of: the Initial Singleton, Atoms, Atomic Forces, Photons, Virtual Particles, Big Bang, Supernovae, Gamma Ray Bursts, Cosmic Microwave Background, and Galaxy Formation.

This cosmological analysis has no need for mathematical assumptions of space expansion or inflation.

Construction: This paper combines the methods and tools of one of our greatest physicist – using Richard Feynman’s start from scratch method and working with known 3D physics and replicable observations that allows us to describe the existence of Chaotic Dark Energy and its role in the Big Bang Creation and its continuing role in our galaxy filled Universe. This is an explosive expansion of the physics from my ***The Big Bang Book: How, Where, & When Demonstrated*** available at Amazon.

Intro to Cosmology, Dark Energy, & Creation at: <https://www.youtube.com/watch?v=W80bz01U8fY&feature=youtu.be>

With this analysis, we open a doorway into an exciting expanded 3D landscape that anyone could take off on some aspect and expand our understanding of our Universe.

Up till this presentation, cosmology had no concept of how our Universe began. Their best source of information – was that our Universe sprang out of nothing based on mathematical equations, not physics. That obscured the Deep Thinking needed about known physics that’s presented herein which shows how Universe emerged from Chaos.

Everything that we know about our Universe, are the inventions of someone’s mind, that may or not be from Deep Thinking, that we now call —The Laws of Physics.

We have had our observational senses enhanced by the invention of microscopes, telescopes and everything in between that should spur one onto some very Deep Thinking about the deepest questions of the day including how was our Universe created and what is the Physics of Chaotic Dark Energy? Today, unsupported by physics, is the current shallow thinking, that our Universe’s atoms were created from a ‘singleton’ smaller than a atom popping out of ‘nothing.’

This singleton then must contain all the atomic material that makes up our Universe and must necessarily be at least a multi-trillion times denser than a black hole while forming out of nothing. Lacking any supporting physics, this concept of a

singleton is not well received by the scientific community.

That indicates that we need to study the closest thing to a singleton found on Earth for a better explanation — the atoms.

The most important thing that we need to keep in mind for this analysis is what Richard Feynman told us: “All things are made of atoms.”

In that light, here assembled is a number of replicable observations when properly arranged, with Deep Thinking, allows us to understand atoms and how the ‘physics’ of chaotic dark energy was employed in the Creation of our Universe; before, during, and after the Big Bang.

The current estimate of all the atoms that make up our Universe is about 10 to the 80th power, and were all created in the Big Bang era computed by NASA now to have occurred back at least 13.8+ billion years ago.

See www.universetoday.com/36302/atoms-in-the-universe/ for the estimate of atoms.

When viewed under the latest ‘noncontact atomic force microscope’, the atoms looked remarkably like spherical ball bearings. See:

Figure 1

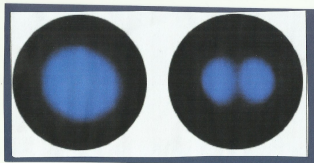
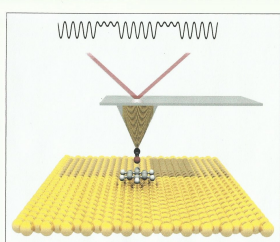


Figure 2



- 1 <https://www.scientificamerican.com/article/the-shape-of-atoms/> and
- 2 <https://newscenter.lbl.gov/2013/05/30/atom-by-atom/>

This next paragraph is the Key to understanding creation:

Assembling some of these 13.8+ billion year old spherical atoms into a match, when struck, emit light photons instantaneously at 186,282 miles per second, indicating that some power [chaotic dark energy?] must drive the atom’s orbiting electrons at the speed of light continuously since the Big Bang and at that speed they are making a million trillion orbits per second giving us that ball bearing shape.

Dividing the distance that light travels in one second (30 billion cm) by the circumference of an atom (0.1 nanometer or about 0.000 000 03 cm) results in that ratio of one million trillion to one or in numbers 10 to the 18th power number of orbits per second.

Further: We note that a very tiny gram’s worth of ancient uranium atoms when properly configured for fission; redirects its power source during a ‘chain reaction’ and destroys Hiroshima.

“7/10ths gram of uranium 235 consumed,” see: <https://gizmodo.com/less-than-2-of-the-uranium-in-the-hiroshima-bomb-actua-1624444762>

Two atomic processes drive light/photons. First, a byproduct of chain reaction fission or second, that atomic fusion viewed by Earth as star/light/photons. Where is this tremendous redirected power coming from? Chaotic dark energy?

Not from a 13.8 billion year old battery pack.

No tiny, atom sized battery works that long or holds that much power. Let’s put some Deep Thinking to work.

The best consideration for this redirected atomic power source of atomic chain reaction fission or in stars that fusion photon byproduct is chaotic dark energy that is continuous redirected by all the atoms fusing in all the stars in all the galaxies in our Universe for at least 13.8 billion years.

In a latest 2016 estimate, our Universe holds about 2 trillion galaxies; averaging a hundred thousand stars each. See:

<https://www.forbes.com/sites/startswithaban/g/2018/10/18/this-is-how-we-know-there-are-two-trillion-galaxies-in-the-universe/#14fd41565a67>

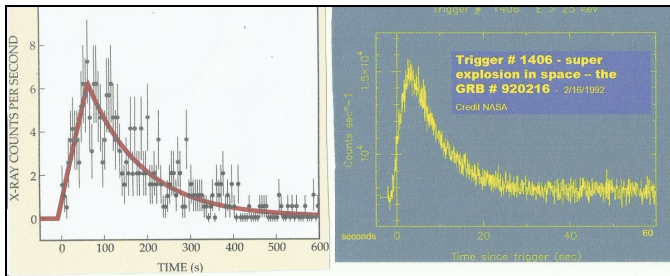
Continuing our observational based Deep Thinking study, this chaotic dark energy must fill all of space, and must move at very high velocities evidenced by pushing electrons in atoms that drive star/light/photons at light speed and very powerfully provides the needs of all the atoms in these 2 trillion star filled galaxies.

Noting that such chaotic dark energy, moving at about the speed of light around our Universe, must incur normal high speed pulsating instabilities as seen in some of the most powerful pulsating graphs of supernovae (SN) and gamma ray burst [GRB] explosions as recorded by NASA.

See figures 3 & 4:

Figure 3 SN 2008D #920216

Fig 4 GRB



<https://physicstoday.scitation.org/doi/abs/10.1063/1.2970204?journalCode=pto> — Figure 3

4-GRB #920216 [uses trigger 1406] [Note: this NASA link is now restricted -see page 50 in *The Bang Book; How, Where, & When Demonstrated* ftp://legacy.gsfc.nasa.gov/FTP/compton/data/batse/trigger/01401_01600/01406_burst/1406_sum.gif]

Figure 3 above presents the 2008 highly pulsating supernova SN 2008D chart with black lines recording that pulsating explosion; the red line plotted is just the statistical average of this very pulsating explosion. This supernova flashed 100 billion times brighter than the sun in that time. But supernovae are tiny —

— compared to the thousands of pulsating gamma ray bursts which shine hundreds of times brighter than supernovae and are around a million trillion times as bright as the Sun. NASA records at least one GRB a day.

Continuing with our pulsating instabilities such as turbulence, flutter, and buffeting as seen in Earth studies, —

— that suggests, that before the Big Bang, this chaotic dark energy must have traveled over every possible pattern until —

— a sufficient amount of this chaotic dark energy pulsatingly converged into a small enough space setting off the combining conversion of the chaotic dark energy's virtual electrons and sub atomic parts into atoms.—

— Just as they did at Stanford Labs where a tiny amount of atomic matter was created by

smashing massive energy beams in '97.

See:

<https://www.slac.stanford.edu/exp/e144/nytimeS.html>

“Virtual particles are indeed real particles.”

See

<https://www.scientificamerican.com/article/are-virtual-particles-real/>

How to create atoms: In that both electron and proton beams are relatively easy to make in the lab, but atoms are much more difficult to make, as seen at Stanford, which shows that staggering amounts of energy are required to create even the tiniest particles of matter.

Consequently I presume that while that turbulent, chaotic dark energy is converging, (which increases its density), it easily creates virtual electrons and protons but not until it reaches maximum convergence and density, does the strong atomic force or chaotic dark energy combine virtual electrons and other sub-atomic parts into its atomic form: the atom.

The atom – bubbling out; entrapping space at the unbelievable increased volume – 248 trillion times the volume of its proton. All in a flash.

The ‘volume’ of a hydrogen atom divided by the ‘volume’ of its proton equals that ratio of 248 trillion to one.

In the twinkling of a cosmic moment these 10 to the 80th power number of atoms pulsatingly bubble out some 248 trillion times the volume of protons. —

— To manifest as: The Big Bang in a very highly pulsating, turbulent, buffeting process bubbling shell after shell of atoms so furiously that the first shell crop of atoms

created is driven by the 2nd shell which is driven by the next shell of bubbles and so forth:

Resulting in the first shell moving away from the epicenter at or near the speed of light and each succeeding bubbling shell is pulsatingly driven with less push and slower speeds until the density becomes too thin to continue the process, all in that creative cosmic moment we now call the Big Bang.

Further, that first shell of atoms, pulsatingly bubbling away from this Big Bang Epicenter, radiates its diminishing power in all directions, and once that radiation passes by it is replaced with radiation from its new farther out position taking longer and longer for its radiation to reach us Earthlings.

That’s like watching a departing car’s tail light that is driving away from a viewer; the light comes from further and further away, is dimmer and takes longer and longer to reach the viewer.

So when that first shell of atoms reached a position some 13.8 billion light years down from the Big Bang, radiation from that location as measured by NASA took another 13.8 billion years to shine back to the epicenter [as recorded today some 27.6 billion years after the Big Bang by NASA] where the last atoms created were bubbled out at 0.2% of light speed or less.

That 0.2% is based on the NASA '89-'93 COBE satellite⁷ study that computes Earth’s velocity to be 600 kilometers per second equaling 0.2% of light speed which equals 372 miles per second.

For that COBE reference:

<http://antwarp.gsfc.nasa.gov/apod/ap010128.html>

We in the Milky Way Galaxy are one of the slowest moving galaxies, with almost everyone else moving away from us. [There are about 100 galaxies whose light is blue shifted in that they are moving toward us.] Not realistic if expanding space was real.

For galaxies moving toward us: <https://www.physlink.com/education/askexperts/ae384.cfm> and <https://www.spaceanswers.com/deep-space/apart-from-andromeda-are-any-other-galaxies-moving-towards-us/>

We are moving comparatively so slow to all the 2 trillion star filled galaxies that we could say we are virtually in the center of our Universe — only 0.2% of the radius of the Universe.

This is how our cosmic microwave background radiation (CMB) [a thin spherical cloud of atoms, too thin to form galaxies surrounding our Universe] was created and its radiation [a reflection of nearby galactic star/light/photons bouncing off of the atoms that make up the CMB cloud] now viewed to be coming from that spherical edge some 13.8 billion light years away from the huge CMB sphere surrounding Earth.

On the Short life of light/photons bouncing:

How Far Could You Bounce A Laser Down A Hall Of Mirrors? “If the mirrored hallway is made of your run-of-the-mill mirror material ..., these mirrors reflect around 90% of the visible light that hits them [first time]. But inevitably, ..., at some point you will run out of photons, as some fraction of them will absorb into the mirror with every bounce.” From:

<https://www.forbes.com/sites/jillianscudder/2016/07/26/astroquizzical-mirror-bouncing/#7473e79f7b2a> and see: <https://www.reddit.com/r/askscience/comm>

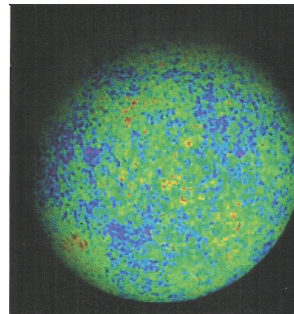
[ents/u8dww/will_light_bounce_between_two_mirrors_indefinitely/](#) “So, with each bounce, you'll lose some light due to absorption.”

[Consequently, with each bounce on a good mirror you lose 90% – it just takes less than 50 bounces for each bouncing photon with good mirrors to get absorbed unless it is unimpeded as seen from the CMB field.]

The bounces of the Big Bang light/photons are very highly limited to **moments** not years.

From the BBC News in 2003; this is the first view of that CMB presented as a sphere by Dr. Max Tegmark of the University of Pennsylvania who processed the image notes that Earth is right in the dead center of this CMB sphere based on the NASA COBE satellite results noted by BBC.

Fig 5 From the BBC News: The Cosmic Microwave Background Radiation Sphere 13.8 billion light years from Earth in every direction.



The BBC News picturing the CMB sphere: <http://news.bbc.co.uk/2/hi/science/nature/2814947.stm>

How long did it take for this cosmic microwave background radiation cloud of atoms to grow from zero size at the time of the Big Bang to a sphere surrounding our observable Universe?

13.8 billion years!

13.8 billion years atoms out from the Big Bang's epicenter and 13.8 billion years radiation return from the CMB field as measured by NASA. That equals 27.6 billion years elapsed since the Big Bang. This is the age of all atoms. This is the age of our universe – 27.6 billion years.

In the meantime the radiating atoms are continuing traveling out into space unabated as far as we know.

This best age calculation of our 27.6 billion year old Universe allows us to include that very old 14.3 billion year old Methuselah star so troubling to current cosmologists. See:

<https://www.forbes.com/sites/startswithaban/2017/09/07/the-greatest-cosmic-puzzle-astronomers-find-stars-that-appear-older-than-the-universe/#2a2dbdc43c44> For stars older than 13.8 billion years old.

Earth [like all atoms] age of 27.6 billion years times its relatively very slow speed of 372 miles per second (That NASA COBE speed) = a scant 55 million light years traveled out from the Big Bang's Epicenter. Only 0.2% of the 13.8 billion light year radius to the CMB from Earth.

Our super slow traveling Earth is virtually right next to the Big Bang Epicenter of our Universe.

Further –We have several extensive space and Earth bound telescope views that support this concept that our very slow moving Earth is only 55 million light years from the Center of our 27.6 billion year old Universe. 0.2% of Radius.

Center Earth in 4 views

1st Shows Earth in the center of Luminous Red Galaxies [LRG's] see figure 6 below. <http://classic.sdss.org/dr5/algorithms/edrpaper.html> &

<https://classic.sdss.org/news/releases/20060515.structure.html>

Fig 6 - LRG's

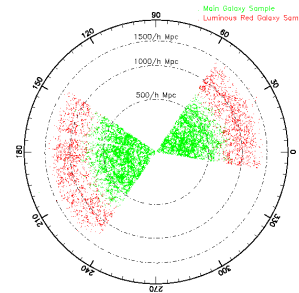
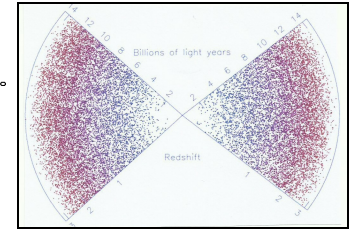


Fig 7 - Quasars

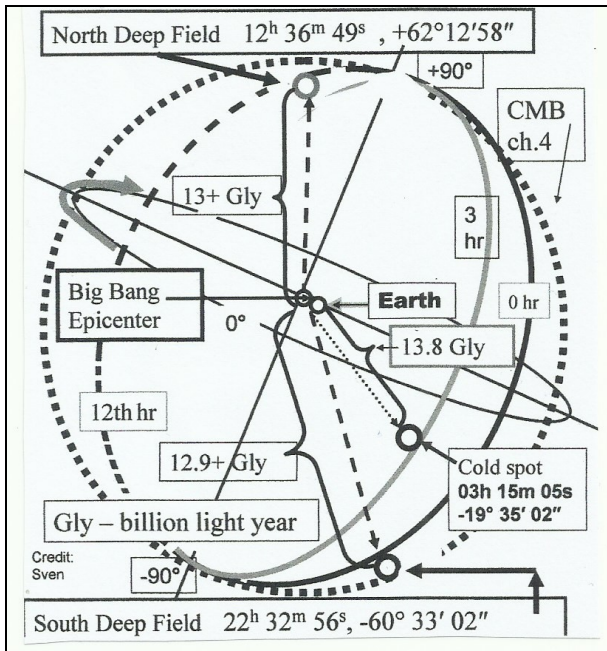


2nd Figure 7 Earth in crosshairs surrounded by Quasars. See: <http://www.2dfquasar.org/wedgeplot.html>

3rd Earth is virtually in the dead center of the surrounding cosmic microwave background radiation sphere. See above figure 5 included in that BBC reporting of the CMB sphere.

4th Earth is in the center of the Hubble space telescope North and South Deep Field Surveys when plotted on a celestial map – See page 45 in *The Bang Book; How, Where, & When Demonstrated* and deep field references at: https://www.spacetelescope.org/science/deep_fields/

Figure 8 NASA Deep Fields around Earth



With Earth firmly in the center of our Universe we can talk about the poorly thought out assumptions of expanding and accelerating space. Once that we can explain how our atoms came bubbling out into space by the pulsating action of Chaotic Dark Energy – that denies the need for expanding/accelerating space or inflation.

See:

<https://www.scientificamerican.com/article/cosmic-inflation-theory-faces-challenges/>

Major problem of that expansion assumption:

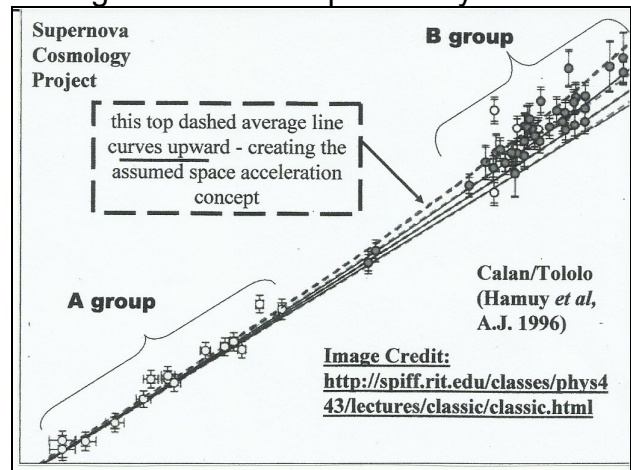
“Complicating matters further, the repulsive force had to be less when the galaxies were forming than it is today. If it had always hovered around its present strength, galaxies would have blown apart before they could have formed, and no one would be here today to worry about it. ‘We want it to be here today and gone yesterday, so that it doesn’t interfere with the growth of structure, said [Michael] Turner.’”

[The cause of accelerating expansion assumption] *From: K. C. Cole, *The Hole in the Universe: How Scientists Peered over*

the Edge of Emptiness and Found Everything. New York: Harcourt, Inc., 2001, page 201.

We need to start by reviewing the facts. First we have recorded the exploding stars called supernovae with Earth based telescopes and they seemed to fall into a one-to-one relationship in that the further distant they were the dimmer they were. That was ok until we viewed further distant supernovae with the Hubble Space Telescope and found that they didn’t fall on the earlier progression but the average of this new scattered distribution The B group indicated acceleration.

Figure 9__1996 Distribution of type 1a Supernovae – the source of the assumed expanding space concept by using averages over scatter plot reality



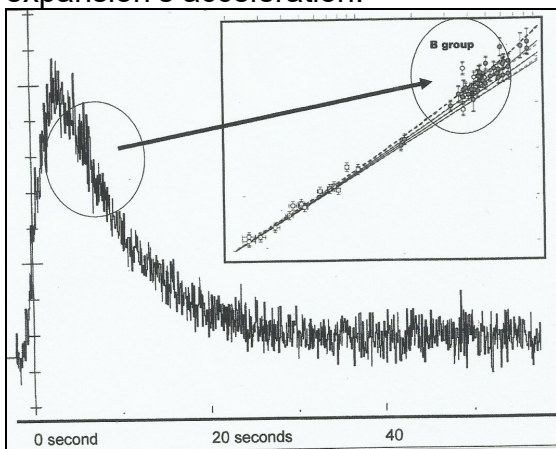
<http://spiff.rit.edu/classes/phys443/lectures/classic/classic.html> near end of page. Figure taken from [Perlmutter et al., ApJ 517, 565 \(1999\)](http://perlmutter.berkeley.edu/papers/1999/)

(Also page 49 in *The Bang Book; How, Where, & When Demonstrated.*)

It is not until we recognize that the scatter plots of supernovae mirror a pulsating push of bubbling atoms that can account for the scattered distribution of said supernovae. Statistical averages have a way of obscuring the true view.

By comparing a pulsating GRB explosion to the supernovae scattered distribution, we create a mirror image, effectively eliminating the so called space expansion or acceleration.

Figure 10 Comparing a GRB light curve with Supernovae; High pulsating push drives the far scattered galaxies containing Supernovae. The average of both charts hides the pulsing drive and the scattered galaxies creating the assumed space expansion's acceleration.



ftp://legacy.gsfc.nasa.gov/FTP/compton/data/batse/trigger/01401_01600/01406_burst/1406_sum.gif with:

https://www.researchgate.net/figure/Hubble-diagram-for-42-high-redshift-Type-Ia-supernovae-from-the-Supernova-Cosmology_fig1_231060958 (Figure 10 from page 52 of *The Bang Book; How, Where, & When Demonstrated.*)

This bubbling of atoms out into space, like any explosion, shoots its output not uniformly, but randomly scattered like the debris from any explosion, just like the scattered distribution of supernovae that caused cosmologists to believe that space is accelerating.

The time element of this bubbling of first atoms traveling out into space, and the CMB radiation

return from that far location is 13.8 billion light years out and 13.8 billion years return to the bubbling epicenter requires a round trip of 27.6 billion years providing all the time necessary for galaxy formation during the atoms headlong rush into space. That means that the youngest galaxies that we see in the Ultra Deep Fields took at least 13 billion years for those farthest

seen galaxies to form their respective rudimentary forms and radiate their meager starlight taking another 13 billion years to reach centrally located, very slow moving Earth — as well as shining on the CMB atom cloud that is reflected to Earth seen as the CMB sphere.

Noting the fact that all the atoms were pulsatingly bubbled out into space and were subject to a variety of forces such as gravity, friction, and turbulence that gave way to the huge variety of galaxy forms noting that the first atoms bubbled out were moving the fastest and each succeeding shell had less and less push along with much more time (billions of years) allowed the variety of forces exerted on these new atoms to assist in the formation of galaxies.

Recap: The furthest [and youngest] galaxies seen in the Hubble Deep Field survey as measured by NASA are about 13+ billion years old and took 13+ billion years to reach that far distant location, providing all the time necessary for outrushing atoms to form into the infantile sized galaxies whose new star light now took 13+ billion years to reach us earthlings as recorded in NASA's Hubble Deep Field. That 27.6 billion year round trip – atoms out, CMB photons back.

Based on all the above we find that the creation of our Universe was constructed out

of Chaotic Dark Energy bubbled out all the estimated 10 to the 80th power number of atoms some 27.6 billion years ago and our very slow moving Earth is right next to the center of our 27.6 billion year old Universe.

All of the above evidence, analyzed with Deep Thinking, finds that the vast, powerful, timeless, and Chaotic Dark Energy existed prior to the Big Bang and continues to drive all the atoms sending out star/light/photons – that fusion byproduct from all the galaxies in our Universe.