The True Value of the Fine Structure Constant Revealed

By Jeff Lee

CENTER FOR REALITY PHYSICS
PO Box 2331
Temecula, CA 92593

- **JLeeCforRP@aol.com <**

ABSTRACT:

In this paper we illustrate how, for the first time ever in the history of Physics, we are able to use the observed physical configuration of the atom's orbits to reveal the correct value of the Fine Structure Constant to be: $7.29907563 \times 10^{-3}$

We also reveal how this new value of the Fine Structure Constant is directly responsible for mathematically describing the actual internal physical structure of the atom's orbits ultimately determining their size and positional spacing in relation to the nucleus, now enabling us to better understand the operating parameters of the atom as it interacts with photons, and with other atoms.

The True Value of the Fine Structure Constant Revealed

By Jeff Lee

CENTER FOR REALITY PHYSICS
PO Box 2331
Temecula, CA 92593

- **JLeeCforRP@aol.com <**

For many decades Theoretical Physicists all around the world have been desperately searching for the **correct** value of the Fine Structure Constant: **α**. This very important mathematical constant, like several of the other well known constants in Physics such as: **c** (the speed of light: **299,792,458 m/s**), or: **h** (Plank's Constant: **6.626×10^{-34} Kg. m^2/s**) etc., is vital to the fundamental structure and operation of the universe. We know, to a great degree of accuracy, the actual value of many of these other universal constants. However the true value of the Fine Structure Constant still remains a mystery.

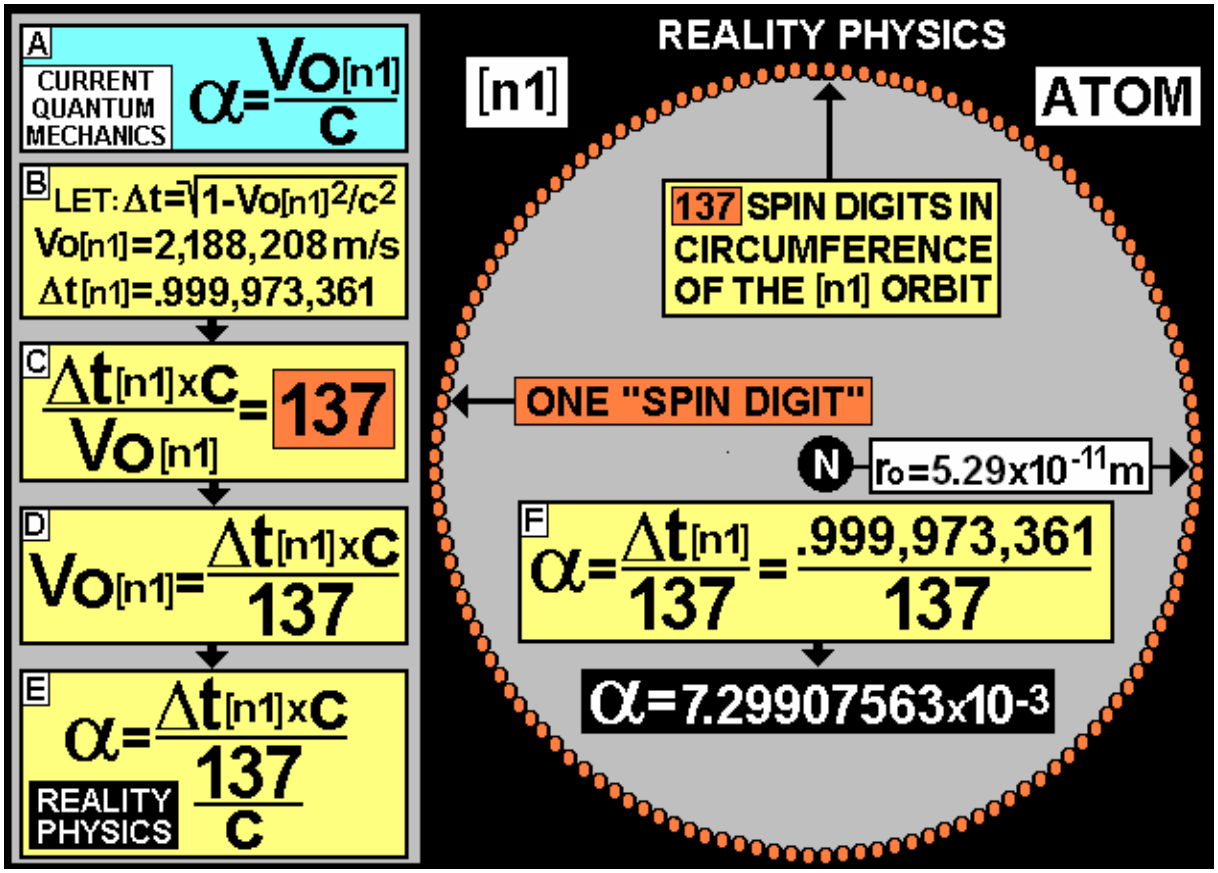
The best estimate we currently have mathematically defining the Fine Structure Constant suggests that it is approximately equal to the inverse of the number: **137**. Further, this number: **"137"** also appears four times in the currently accepted computation of the mathematical definition of the Fine Structure Constant which, as shown below in equation **(1)**, is: $\alpha = 7.297352570\ (50) \times 10^{-3}$, or:

$$(1)\quad \alpha = \frac{\cos(\pi / 137)}{137} \cdot \frac{\tan(\pi / (137 * 29))}{(\pi / (137 * 29))} \simeq 1/137.0359997867 \quad [1]$$

So now the obvious question becomes, how is this number: $\alpha = 7.297352570\ (50) \times 10^{-3}$, we are examining here mathematically related to atomic structure? In what way does this Fine Structure Constant as shown above configure the orbits of the atom into the pattern we observe today? Is it possible to write simple, yet precise, fundamental equations revealing how both the spacing and the operating parameters of the orbits of the atom are mathematically defined by this Fine Structure Constant? Also, how do these mathematical definitions as derived directly from this very important universal constant explain the physics interconnecting the positional spacing, the radius, the surface area and the overall known configuration of the orbits of the atom with respect to its nucleus?

In order to answer these questions we find we must, first of all, make detailed observations revealing real, factual evidence mathematically defining the actual physical interrelationships of how the orbits within the atom are internally configured. For example, in order to find the correct value of the Fine Structure Constant we must begin by now understanding that the Fine Structure Constant is actually: ***"a dimensionless "Coupling Constant" mathematically interconnecting the interaction of a particle to another particle, or to an electromagnetic field in close proximity to the particle"***. Accordingly, since we know the atom is composed of subatomic particles (electrons, protons, etc.) interacting within an electromagnetic field, we obviously deduce that the atom, itself, must be the "starting point" for our search for the true value of this very important universal constant.

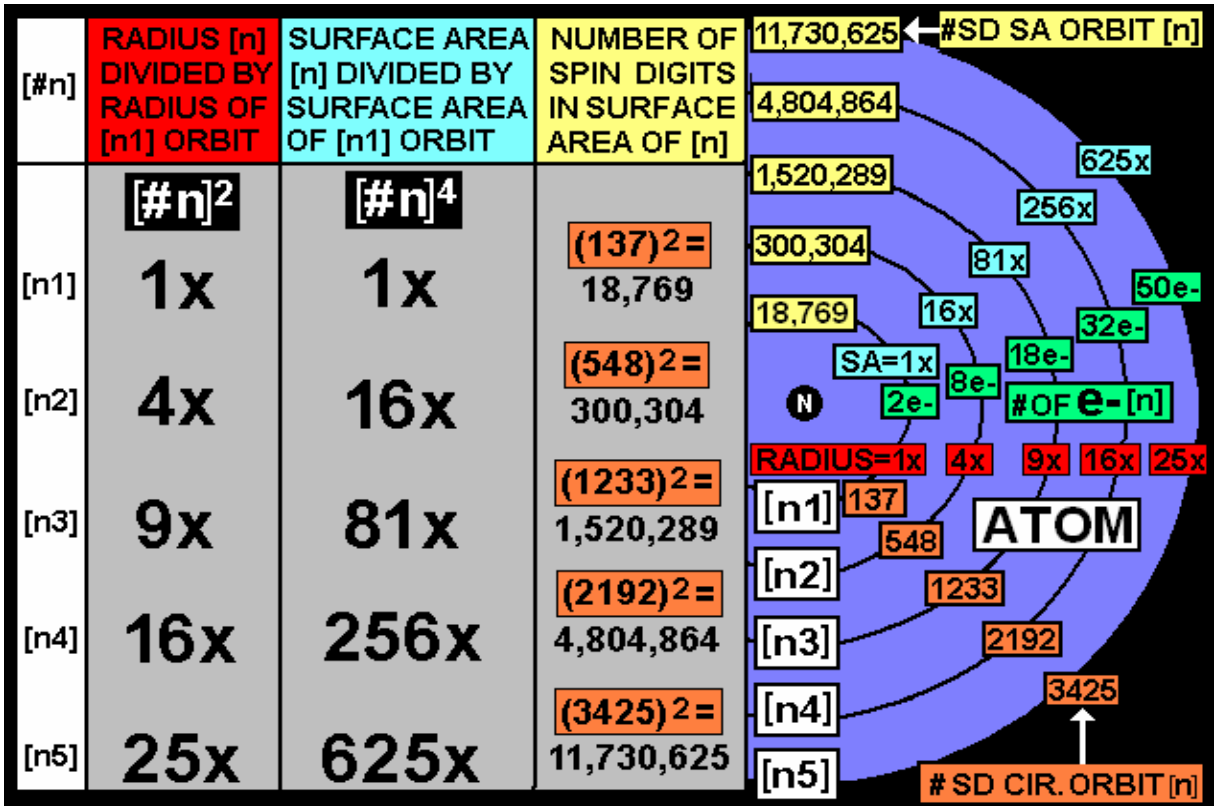
FIG. 1



We begin with the equation of current Quantum Mechanics as shown in the top blue box: **Fig. 1-A**: **$\alpha=Vo_{[n1]}/c$**. Since, with Reality Physics, electrons are actually: "**photons spinning at the speed of light**", and because: "**light always travels at the speed of time**" the electron, as it travels at its orbital velocity of: **2,188,208 m/s**, experiences a Time Dilation (with respect to the still frame of the nucleus) of: **.999,973,361** (as shown in box **1-B** in **Fig. 1**). In box **1-C** we multiply this: **$\Delta t_{[n1]}$** times **c** and then divide by **$Vo_{[n1}$** to obtain: **137**. Solving for **$Vo_{[n1]}$** (as shown in box **1-D)**, we substitute this term: **"$\Delta t_{[n1]}$ x c/137"** for the **$Vo_{[n1]}$** term in the equation in blue box **1-A**, to obtain the equation in box **1-E.** Canceling the: **"c's**" we obtain **$\Delta t_{[n1]}/137$**, as shown in **1-F**. Dividing **.999,973,361** by **137** we, for the first time in the history of Physics, obtain the correct value of the Fine Structure Constant to be: **7.29907563x10^{-3}** or: **1/137.0036496** [3] .

Unlike with current thought in Theoretical Physics, Reality Physics reveals the fact that all matter (subatomic particles – electrons, protons, etc.) is made of light ("photon spin"), and that light always travels at the speed of time: or **"c"**. This now allows us to illustrate how the velocity of the orbiting electron causes a Time Dilation to occur which simultaneously also causes the particle spin rate of the electron to slow down as it orbits the atom, now enabling **exactly 137** "spin digits" to fit within the circumference of the **[n1]** orbit as shown by the equation **Fig. 1-F**: $\alpha = \Delta t_{[n1]}/137$. This is why, when we divide the Time Dilation of the **[n1]** orbit by **137**, or the number of "spin digits" in the circumference of the **[n1]** orbit, we obtain the correct value of the Fine Structure Constant: $7.29907563 \times 10^{-3}$. Using this new value of the Fine Structure Constant we are now able to describe the atom as a "perfectly configured mathematical design" as illustrated below if **Fig. 2.**

FIG. 2



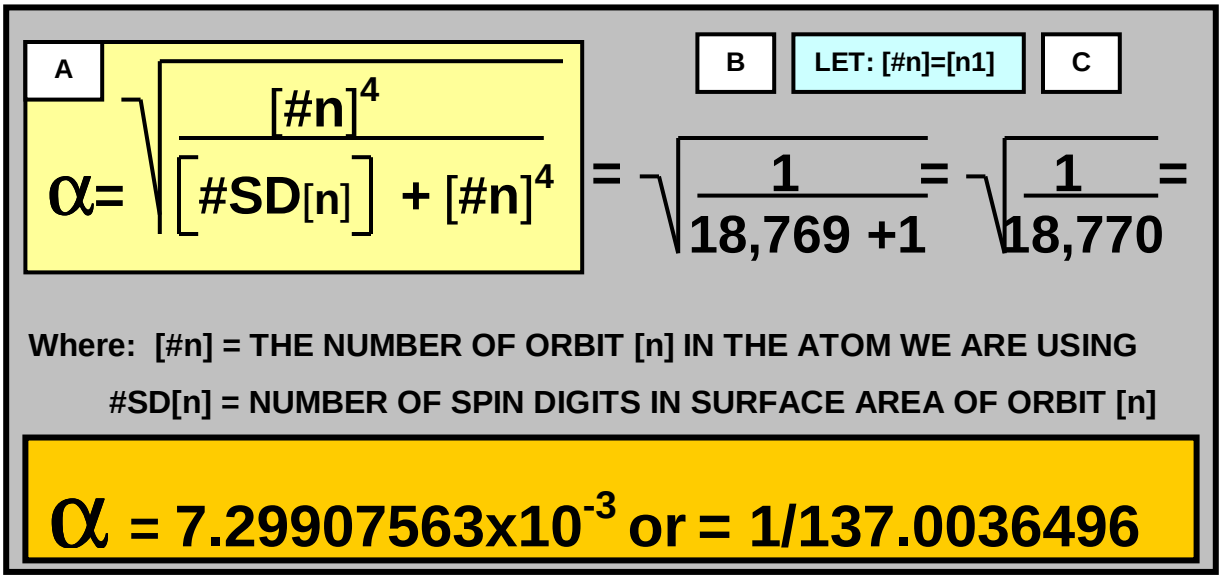
In **Fig. 2**, we show a cross sectional view of the orbital structure of the atom in the right portion and in the left portion we have a table showing the ratio of the radius of orbit **[n]** divided by the radius of the **[n1]** orbit in the left column: **= [#n]^2**, the surface area of the **[n]** orbit divided by the surface area of the **[n1]** orbit in the middle column: **= [#n]^4**, and in the far right column we show the number of electron sized spheres a Compton wavelength in size (from now on referred to as: **"spin digits"**) necessary to completely fill the surface area of the given orbit **[n]**. As also shown in the far right column in **Fig. 2**, we reveal how we calculate the correct number of **"spin digits"** within a specific orbit of the atom: **[n1] = 18,769, [n2] = 300,304, [n3] = 1,520,289, [n4] = 4,804,864** and **[n5] = 11,730,625** by simply squaring the number of **"spin digits"**, completely filling up the circumference of that given orbit, where: **(#SD in cir.[n])^2 = number of spin digits in surface area of orbit [n],** or: **#SD[n]**.

In order to understand the true mathematical relationship the Fine Structure Constant has with the way that the orbits of the atom are arranged we must, first of all, make sure we are working with the **correct** value of the Fine Structure Constant. So far, no one in the field of Theoretical Physics has found any way to calculate the true value of this constant meaning, it is still not possible for physicists today involved with current Quantum Mechanics to reveal how the Fine Structure Constant is mathematically, or physically, related to atomic structure. So how do we confirm the **true** value of this universal constant and reveal how it is directly mathematically related to observed atomic structure?

What we are looking for is a specific "number" common to all of the orbits revealing the reason as to why the orbits are arranged in a configuration where both the radius and circumference increase as the square of the orbit number, as the surface area increases as the fourth power of the orbit number, as we go in a direction out away from the atom's nucleus. So the real question is**: *How does this Fine Structure Constant create the mathematical condition configuring the internal physical structure of the orbits thereby determining their positional spacing around the nucleus?***

The only possible way we can answer this question is to exactly duplicate the **correct** value of the Fine Structure Constant we introduced in **Fig. 1** by using the known structure of the atom as defined by Reality Physics. We find we can do this by, first of all, calculating the total number of spin digits in the surface area of the inner most **[n1]** orbit of the atom by simply squaring the number of spin digits in the circumference of the **[n1]** orbit, or: $(137)^2 = \underline{18,769}$, and then substitute this number into this very simple equation called: **"The Quantum Signature Foundation Equation"**, shown in **Fig. 3- A**.

FIG. 3

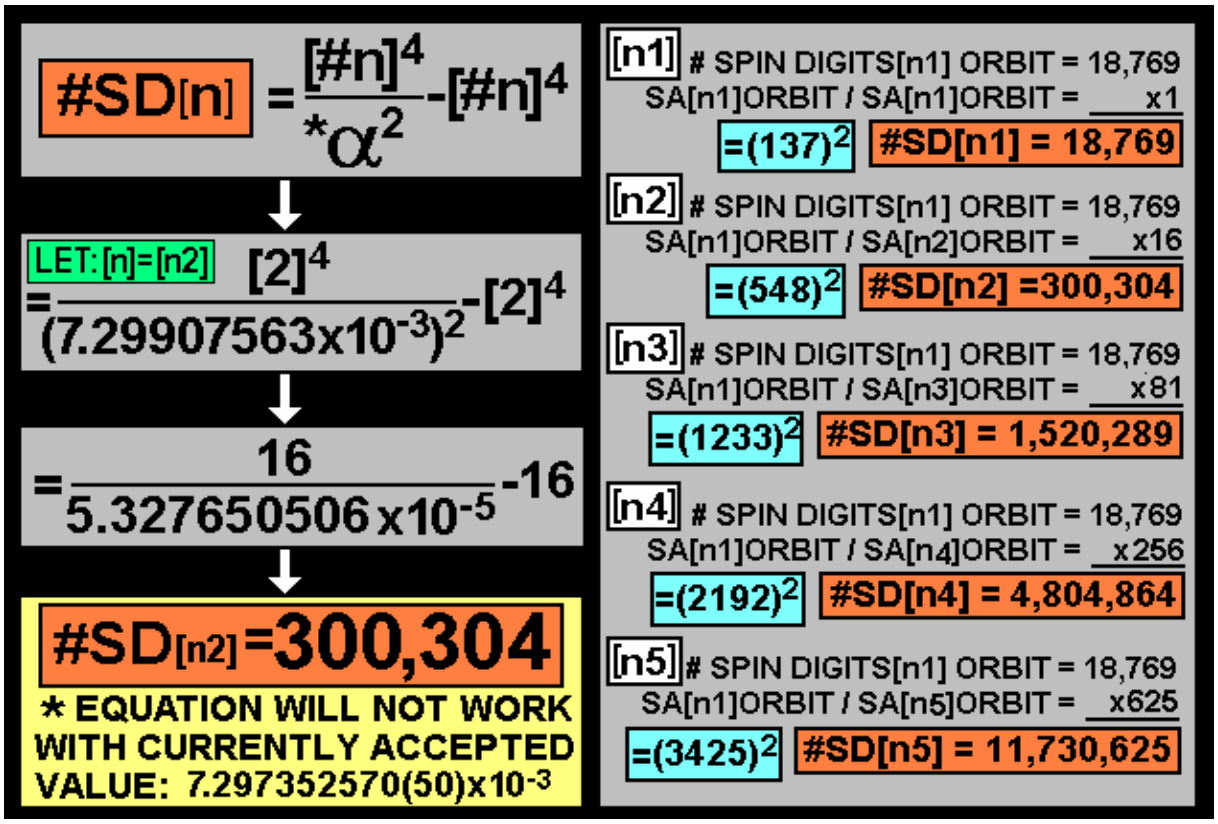


By substituting in the number of spin digits in orbit **[n1]**, which is: **18,769**, and also the orbit's number, which is: **1**, into this: **Quantum Signature Foundation Equation**, as shown in **Figs. 3-B** and **3-C** we are now able to exactly duplicate the **correct** value of the **Fine Structure Constant** we calculated earlier in **Fig. 1**, which we, again, find to be: **$\underline{\alpha = 7.29907563 \times 10^{-3}}$**, or: = **$\underline{1 / 137.0036496}$** .

So how do we know this value we have just revealed here: **7.29907563x10^{-3}**, for the Fine Structure Constant is the correct one? As previously stated, what we are looking for is a number common to all of the atom's orbits in that it is directly mathematically related to the overall physical structure of the atom describing how the spin digits are configured within the orbit in order to produce the actual size of the specific orbit, and the physical spacing between the orbits as they are arranged around the nucleus in the concentric framework we are so familiar with today.

By solving the **Quantum Signature Foundation Equation** in terms of: **number of spin digits per orbit** [**n**]: #**SD**[**n**], shown below in the top left gray box in **Fig. 4**, we now substitute in the orbit number of the **[n2]** orbit into this configuration of the Quantum Signature Foundation Equation, along with this new value of the Fine Structure Constant: * **7.29907563x10^{-3}**, as illustrated by the two gray boxes directly below it, to calculate the **correct** number of spin digits: **300,304** in the **[n2]** orbit, as shown in the orange box enclosed within the yellow box in the bottom left corner of the diagram.

FIG. 4



As shown in the table in the right half of **Fig. 4** above, using this new value of the Fine Structure Constant from the equation in the top left gray box in **Fig. 4**, we calculate there are: **300,304** spin digits configured within the surface area of the **[n2]** orbit, exactly matching the amount in the table for the **[n2]** orbit. Now, looking back to the far right column in the table located in the left-hand portion of **Fig. 2**, we confirm this is correct since it completely agrees with the answer we obtained by simply squaring the number of spin digits in the circumference of the **[n2]** orbit since: **(548)^2 = 300,304**, as also shown in the small light blue boxes in **Fig. 4**, revealing how this is true for all of the atom's orbits.

In **Fig. 4** we observe how easy it is to prove this equation: $\#SD_{[n]} = [\#n]^4/\alpha^2 - [\#n]^4$, works perfectly for all of the orbits. All we have to do is substitute in **ONLY** the orbit's number: **[#n],** into this equation to obtain the correct amount of electron sized Compton wavelengths (Spin Digits) completely filling the surface area of that orbit in the atom. However this simple, yet precisely accurate, equation will **NOT** work using any other value than: $\alpha = 7.29907563 \times 10^{-3}$, meaning that the value currently assumed by academic Theoretical Physics: $\alpha = 7.29735257(50) \times 10^{-3}$, is obviously totally **incorrect**. This can be easily verified as we attempt to use this value as currently accepted by Quantum Mechanics today in the equation as shown in the top gray box in the upper left corner of **Fig. 4,** since the only answers we obtain result in non-integer values having no interconnection at all with observed atomic structure.

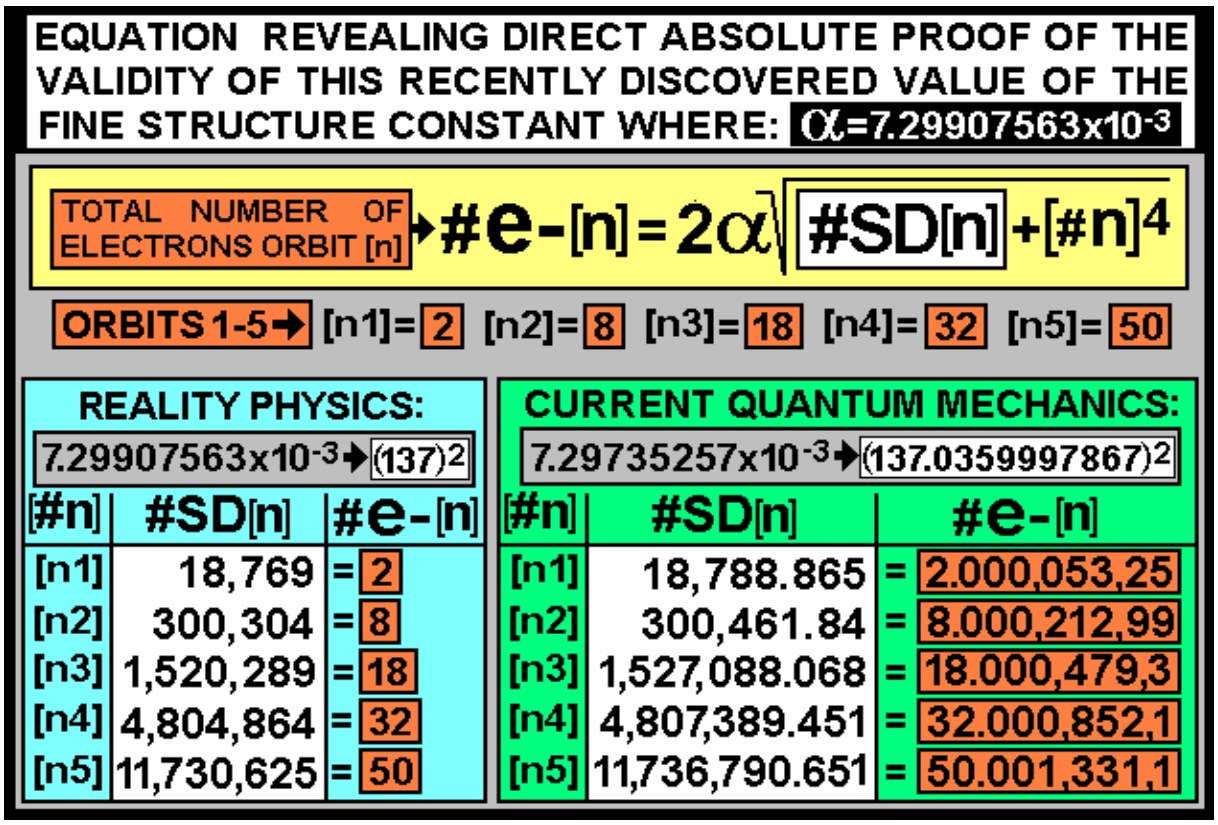
However, by using this new value of the Fine Structure Constant we have just discovered here in this new **Quantum Signature Foundation Equation** as shown in **Fig. 4**, we obtain, not only exact integer answers that perfectly, mathematically, describe the orbital structure of the atom, but exact integer answers that are **precisely correct** since, as can be observed in the right hand column in the table located in the right portion of **Fig. 4**, these results exactly duplicate the number of spin digits filling each orbit. Since current Quantum Mechanics uses the "**Heisenberg Uncertainty Principle**" there is no possible way Theoretical Physicists today, or at any time in the foreseeable future, will ever have any possible chance whatsoever of discovering the true value of the Fine Structure Constant.

This is because this new value of the Fine Structure Constant revealed here describes a "**perfect**" universe completely different from the **"imperfect"** universe as accepted by Quantum Mechanics today with an "**Uncertainty Principle**" defining electrons as: "***vague and elusive entities where it is impossible to simultaneously know their position and velocity***. This is why we must totally reject the currently accepted value of the Fine Structure Constant shown in **equation 1** near the beginning of this paper where: $\alpha = 7.297352570(50) \times 10^{-3}$ [1], and accept this new **correct** value as revealed where: $\alpha = 7.29907563 \times 10^{-3}$ [3], since it **does** produce integer answers that completely agree with observation as proven by **The Quantum Signature Foundation Equation,** shown in **Fig. 4** above.

Quantum Mechanics describes a particular study within the field of Theoretical Physics concerned primarily with subatomic particles, atomic structure, and the understanding of how energy and light are stored within and interact with matter. The word "**Quantum**" means "**one bit**, or **unit**". In Quantum Mechanics the word "**Quantum**" refers to a system of interaction between matter and energy where the amounts of energy exchanged between particles, or particles and electromagnetic fields, are **always** portioned off in **integer** amounts only. This further implies that we should be able to write very simple, yet totally mathematically precise, equations able to completely describe both the physical structure and the observed operational parameters of the atom using the Fine Structure Constant in conjunction with the observed numerical values describing known atomic structure, to now produce answers that are in perfectly descriptive **integer** results we can define as: "**quantum units**". [2]

This can be demonstrated using this new equation of "Reality Physics" shown below in **Fig. 5**, which is able to furnish us with direct, absolute proof revealing, beyond any possible doubt whatsoever, that this new value of the Fine Structure Constant of Reality Physics: **$7.29907563x10^{-3}$** is the **correct** one.

FIG. 5



In order to reveal this absolute proof, we now design an equation as shown in the yellow box of **Fig. 5**. What this equation does is mathematically connect two known facts about the atom: **1. (white box)** "**the number of Spin Digits within the surface area of orbit [n]**, or: **#$SD_{[n]}$"** to the: **2. (orange box) "the total number of electrons it takes to completely fill the given orbit [n]**, or: **#$e-_{[n]}$". So** what we have here is an equation with all "**constants**" on the right side: **2, [#n], α**, along with one "**known variable**" **1. (white box) "the number of Spin Digits in orbit [n]"**, directly connected to the "**known variable**" on the left side: **2. (orange box) "total number of electrons completely filling orbit [n]".** By using our **new value for the Fine Structure Constant** in this equation, along with the values of the "known variable" on the right side: **#$SD_{[n]}$**, or: **$(137)^2$ x $[\#n]^4$,** we calculate exact integer results for the amount of spin digits per each orbit **(1-5)** which, when substituted into this equation produces the exactly CORRECT integer answers for the total number of electrons filling the given orbit **[n]**, where **[n1]=2e-, [n2]=8e-, [n3]=18e-, [n4]=32e-** and **[n5]=50e-**. However, using the value of the Fine Structure Constant as currently accepted by Quantum Mechanics academia today in this equation we find we obtain only these **non-integer answers** where: **[n1]=2.000,053,25e-, [n2]=8.000,212,99e-, [n3]=18.000,479,3e-, [n4]=32.000,852,1e-** and **[n5]=50.001,331,1e-**, obviously exposing the fact that this value currently accepted by Theoretical Physics academia is **completely** wrong!

It is more than obvious to us it is not possible to have: **2.000,053,25 electrons** in orbit **[n1]**, or **8.000,212,99 electrons** in orbit **[n2]**, or any of the other "**non-integer**" answers we found for the **"known amount of electrons totally filling orbit [n]"** using this value of the Fine Structure Constant as accepted by Theoretical Physics academia today in this equation. Consequently, we can reason we must discard this currently accepted value if we want to correctly describe the known structure and observed operating parameters of the orbits of the atom we are familiar with, since these correct answers can **ONLY** be in the known integer amounts we find as we observe the atom today.

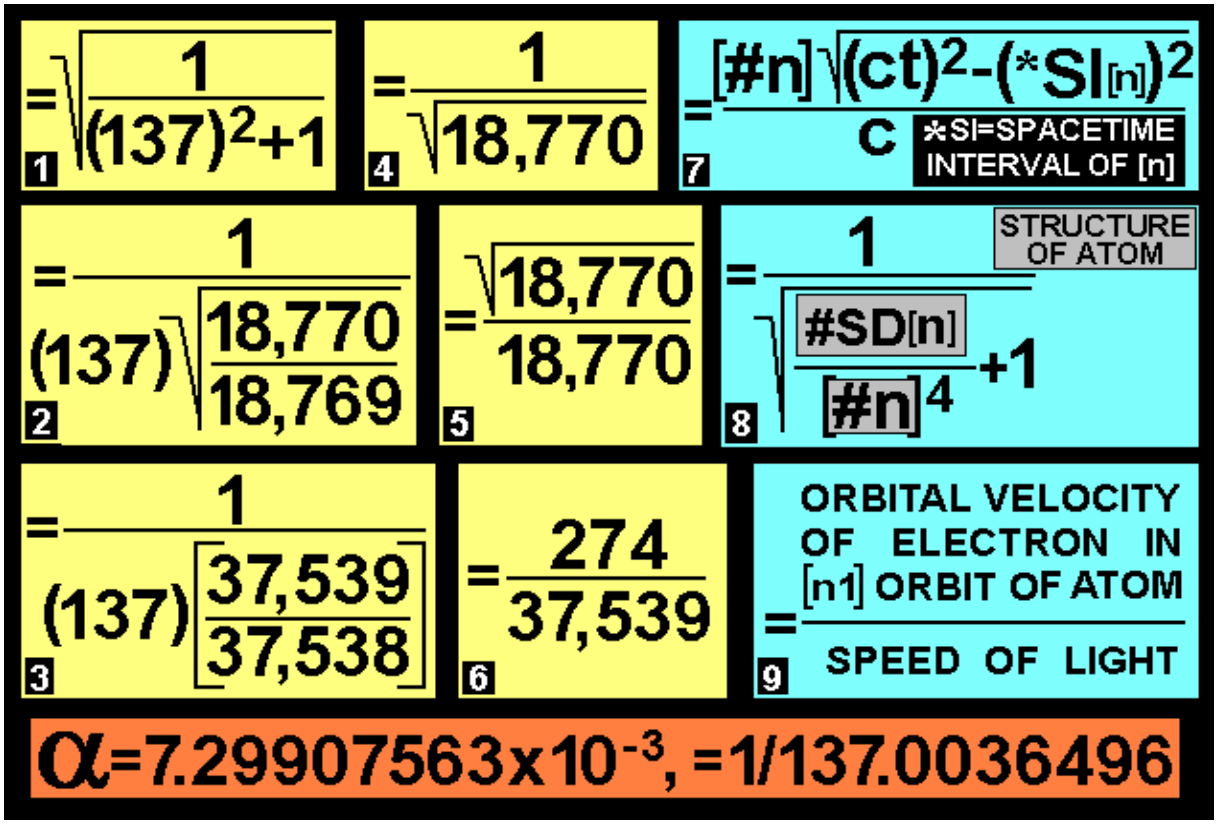
It is interesting to observe here how this "assumed" value of the Fine Structure Constant as accepted by Theoretical Physics today is within about only **1/580,000th** of this new **correct** value we have just introduced in this paper. So we might make the observation that Theoretical Physics academia was indeed very close to finding this correct answer but could not because they simply didn't know where to look. As previously stated, in Reality Physics we do not conger up any non-provable theories, nor do we fabricate any kind of hypothetical collection of speculative assumptions, to be used in a blind attempt to impose "our idea of what we think the universe should be" upon the actual way that the universe "really is". According to the Prime Directive of Reality Physics: **"The universe, itself, is the ultimate arbiter of validity, not our proposed theories seeking to describe it".**

What this actually means is: "**If we can not get the universe to agree with our proposed theories it is not the universe's problem, it is ours!**" As we also previously stated: "**The universe is totally perfect within its vast scope of operation down to the smallest detail**". This obviously requires the condition where every atom in the universe must be physically described as being characteristic of a perfectly interconnected mathematical design as revealed by the equations of Reality Physics in this paper, where we obtain only the **correct integer answers** for "**the number of Spin Digits as contained within a given orbit [n]**", and for "**the number of electrons completely filling orbit [n]**". This now illustrates to us why it is completely impossible to change, either the known value of any of the constants on the right side of this equation in **Fig. 5 (2,** or **[#n])**, or to change the **correct** value of the **Fine Structure Constant** as introduced in this paper, as we use these values in this equation to calculate "**the correct total number of electrons completely filling each of the atom's orbits**".

By understanding how **"Reality Physics"** describes the observed configuration of the atom's orbits as a "**perfectly interconnected mathematical design**"**,** we reveal why it is impossible for Quantum Mechanics to ever obtain the **correct** value of this very important universal constant since they still use the "**Uncertainty Principle**". From previous reading we now know the Fine Structure Constant is: "**a dimensionless constant mathematically coupling the interaction of a particle to another particle, or to an electromagnetic field in close proximity to the particle**". We also know the atom is: "**an active configuration of superimposed electromagnetic fields created by the orbital motion of the electrons as they circle the nucleus**" meaning, the atom **is** "**particles interacting within an electromagnetic field**". This means**,** "**it is from within the orbital structure of the atom, itself, we find the correct value of the Fine Structure Constant**", as revealed by "**Reality Physics**"

In **Fig. 6** we show nine different ways of mathematically defining this new value of the Fine Structure Constant: α = **7.29907563x10^{-3}**. By observing how the values of the numbers used to mathematically define this constant are related to the number: **137**; i.e., **274=2x137**, **18,769=(137)^2**, **18,770=(137)^2+1** **37,538=2x(137)^2** and **37,539=2x(137)^2+1,** as shown in **Figs. 1-6**, we observe how the number: **137** is directly mathematically interconnected to this new value of the Fine Structure Constant we have here.

FIG. 6

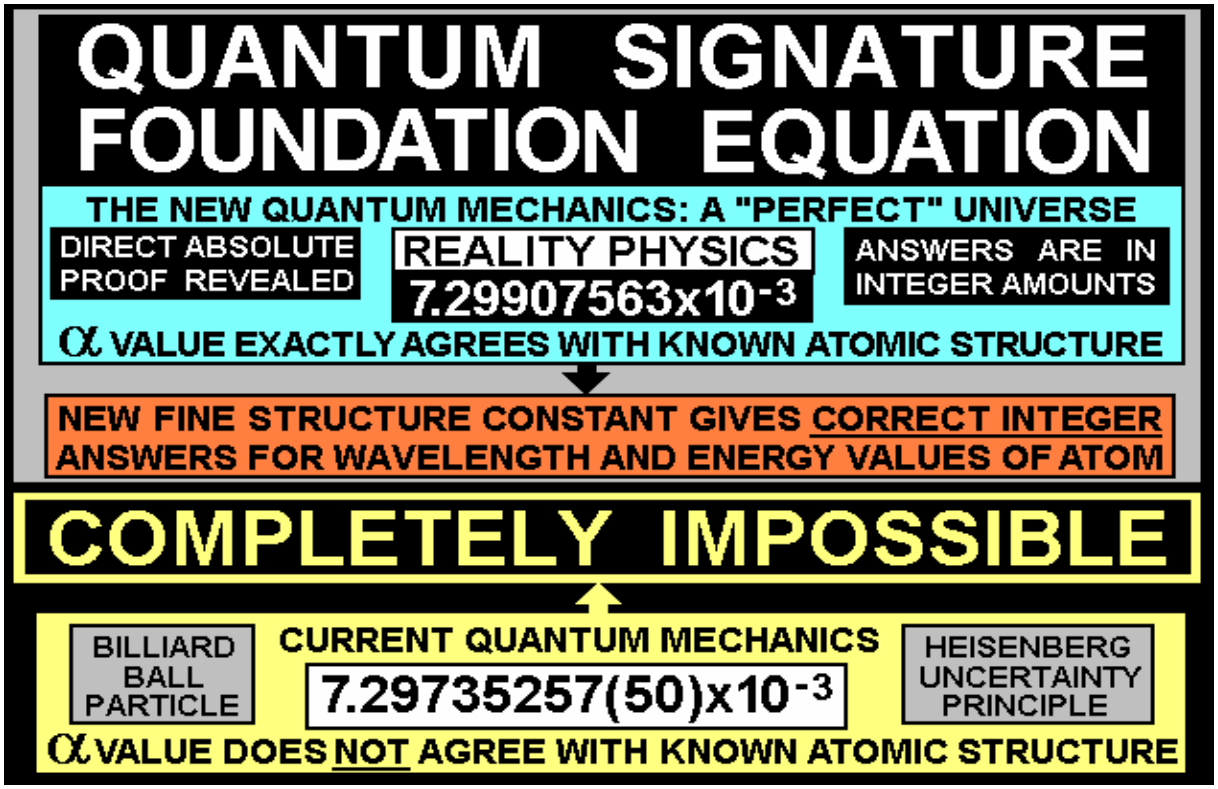


As we observe, there is somewhat of a "contrast" here when we notice the very simple and yet direct ways the number **137** is used to mathematically define this new value of the Fine Structure Constant in diagrams: **1-6** (yellow boxes), as opposed to the somewhat questionable way Theoretical Physics academia uses **137** to define it's projected value of **7.297352570(50)x10^{-3}** [1]. Secondly, we can also observe that, unlike this currently accepted value, this new value introduced in this paper now makes it possible to directly, mathematically interconnect the Fine Structure Constant to the: **"Space-time Interval"**, as shown by the equation in the blue box numbered **"7"** in the upper right corner of **Fig. 6**.

Just below it in blue box numbered **"8"** we show how this very simple equation uses a known fact describing the observed structure of the atom: **"the number of spin digits in the surface area of orbit [n]**, along with only the orbit's number: **[#n]**, and the constant: **"1"**, to calculate the exact value of the newly discovered Fine Structure Constant shown in the orange box at the very bottom of **Fig. 6**. In the blue box directly below it numbered:**"9"** we show how this same value can be calculated by dividing the known orbital velocity of the **[n1]** orbit in the atom by: **"c"**, or "**the speed of light".**

Once we reveal the fact that there is an exact integer number of Spin Digits: **"137"** structuring the circumference of the **[n1]** orbit we totally disprove the "**Uncertainty Principle**" of current Quantum Mechanics. This is because this now allows us to precisely describe the actual physical configuration of how the particle spin of the electron is used to form these orbits of the atom, due to the electron's orbital velocity. This obviously means it is now possible to **simultaneously** know both the electron's velocity and physical location, as it is configured within a specified orbit of the atom. This also further means we can get completely rid of the "**Uncertainty Principle**" forever since we have revealed the atom to be this completely internally consistent mathematical design. We can now use this "**perfect mathematical design**" of the atom we have discovered here to, for the first time ever in the entire history of Physics, now reveal the correct value of the Fine Structure Constant to be **$7.29907563 \times 10^{-3}$**

FIG. 7



Hopefully this true value of **$7.29907563 \times 10^{-3}$** [3] will soon be accepted throughout Theoretical Physics academia as the correct value of the Fine Structure Constant now allowing us to reveal a totally new interconnected mathematical scheme existing within the atom directly responsible for configuring the structure of it's orbits and determining it's many different operating parameters, that is completely "hidden away" from Quantum Physicists today.

REFERENCES

[1] http://en.wikipedia.org/wiki/Fine-Structure-Constant (mathematician James Gilson)

[2] **Wave Nature of Electron:** http://hyperphysics.phy-astr.gsu/Hbase/hframe.html

[3] **J. Lee**, **The GOD CIPHER,** pages: **120-137**, MindSight Publications, Temecula, CA 2005