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# A Classical Interpretation of the Quantum Universe Extrapolated from the Fine Structure Constant ( $\alpha$ )

By John R. Crary

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# A Classical Interpretation of the Quantum Universe Extrapolated from the Fine Structure Constant ( $\alpha$ )

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## I. INTRODUCTION

The Fine Structure Constant  $\alpha$  value is  $\sim 1/137$ , precisely measured as  $137.035999206[1]$ , which characterizes the strength of the electromagnetic interaction between elementary charged particles. The FSC Model proposes that there may be a classical interpretation for this unitless QED number as described in a previous article [2], "A Conceptual Model of our Universe Derived from the Fine Structure Constant ( $\alpha$ )."

The FSC Model calculates the value of  $\alpha$  at 137.036 by assuming that our universe is a hybrid of the twin prime number metaverses  $U\{137\}$  and  $U\{139\}$  where  $\alpha = 137.000$  and  $\alpha = 139.000$  respectively. The FSC theory assumes that the whole number part of  $\alpha$ , 137 is due to it being associated with the  $U\{137/139\}$  metaverse and that the fractional part of  $\alpha_{137} = 0.036$  is the actual measure of the electromagnetic force (EM) that binds charged particles.

Most importantly, the Fractional Coupling Constants ( $\alpha_m$ ) values can be generated for the other twin prime metaverses, and together, those differences

drive the functional nature of our universe. The questions being investigated are comprehensive and include attempts to align the FSC Model property set calculations with existing scientific theories to ultimately define a collective inference for why we have Matter, Dark Matter, and Dark Energy.

## II. FSC FINE STRUCTURE CONSTANT CALCULATIONS

The Python-generated Fine Structure ( $\alpha$ ) calculations are shown in Table 1, which displays the property counts for hypothetical metaverses  $U\{139\}$  and  $U\{137\}$ . The top row represents the  $U\{139\}$  property counts where  $\alpha = 139.000$ , while the bottom row represents the  $U\{137\}$  property counts for  $\alpha = 137.000$ . In each case, the generated  $\alpha$  values represent the sum of the prime number elements in their respective property sets.

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Table 1: FSC Fine Structure Calculations

Metaverse	D01	D02	D03	D04	D05	D06	D07	D08	D09	D10	P-Sum	$\alpha/\alpha_m$
U{139}	1	1	48	54	240	235	109	86	2	0	776	$\alpha = 139.000$
U{139/137}	{139} $\rightarrow$ {2,137} $\downarrow$ {2,U{137}} $\downarrow$		<b>Fractional Coupling Constant <math>\alpha_{U\{137/139\}}</math></b> $((U\{139\}+1) - (U\{137\}-1))/(U\{139\} + U\{137\}) \rightarrow 777$ $(777 - 723)/(777 + 723)$									$\alpha = 137.036$
U{137}	1	0	54	34	235	214	86	98	0	2	723	$\alpha = 137.000$

The yellow section in the middle describes a hybrid U{137/139} metaverse that produces an  $\alpha = 137.036$  with a Fractional Coupling value of  $\alpha_{137} = 0.036$  based on the U{137} and U{139} property counts.

The red font describes how the U{137} property set must originate from the U{139} metaverse to create the hybrid U{137/139} metaverse. This subtracts the D01 = 4 property from U{137} and pulls it from the U{139} D02 property set (+1) to create the hybrid configuration determining the fractional  $\alpha_{137}$  value.

This hybrid FSC model gives the Fine Structure Constant ( $\alpha$ ) a classical mathematical definition using a Relative Dominance (RD) calculation of the (U{139} minus U{137})/U{137/139} for the property calculations described in blue. This RD/ $\alpha_m$  calculation (A-B)/(A+B) is then applied to the other twin prime metaverses to identify how their hybrid fractional EM forces compare to the U{137/139} metaverse.

Lastly, the FSC property sets represent a dissection of the Fine Structure Constant ( $\alpha$ ) into a range of n-dimensional sets of prime numbers that define focal points of quantum energy for each metaverse. The theory is that the higher the twin prime ratio of these property sets, the more matter-like its quantum nature. As an example, the U{137} 10<sup>th</sup>-dimension has two property sets, {2-3-5-7,11-13,17-19,23,37} and {2-3-5-7,11-13,17-19,29-31} where the elements sum to 137 and the "-" indicate pairing of twin prime values. This represents the highest twin prime ratios for our U{137/139} metaverse [2] and is presumably the most functional.

The supposition is that only prime number sets represent stable quantum states, whereas composite numbers are unstable and cannot form property elements. Properties from different metaverses seem to have the same "quantum gravity," but the higher the twin prime pair, the larger the number of property sets they generate.

The FSC Metaverses represent absolute energy levels, while the Fractional Coupling Constants ( $\alpha_m$ ) represent their relative EM strength between the hybrid metaverses.

Table 2 illustrates the Fractional Coupling Constant ( $\alpha_m$ ) calculations for the twin prime metaverses U{2/3} through U{197/199}. The U{137/139} hybrid metaverse row for light is highlighted in yellow. The higher  $\alpha_m$  values (Baryonic Matter) are highlighted in green, while those with lower  $\alpha_m$  values in grey represent the Dark Metaverses.

III. METVERSE COUPLING CONSTANTS

The difference between  $\alpha$  and  $\alpha_m$  is that  $\alpha$  reflects the fact that it is extracted from the U{137/139} hybrid metaverse, while  $\alpha_{137}$  is a measure of its actual Electromagnetic Force (EM), where:

$\alpha = U\{137/139\} + \alpha_{137} = 137 + 0.036 = 137.036$

Table 2: Twin Prime Metaverse Hierarchy

Metaverse U{P1/P2}	P1/P2 Ratios	$\alpha$	$\alpha_m$	P1 Sums	Metastate
U{2,3}	1/1	3.000	1.00000	585	Baryonic Matter
U{3,5}	1/2	4.000	1.00000		
U{5/7}	2/2	5.500	0.50000		
U{11/13}	1/2	12.000	1.00000		
U{17/19}	2/3	17.600	0.60000		
U{29/31}	7/9	29.250	0.25000		
U{41,43}	14/15	41.103	0.10345		
U{59,61}	35/39	59.081	0.08108		
U{71,73}	61/67	71.063	0.06250		
U{101,103}	204/224	101.051	0.05140		
U{107/109}	257/278	107.043	0.04299		
U{137/139}	724/776	137.036	0.03600	724	Light
U{149/151}	1064/1136	149.034	0.03364	11,604	Dark Matter & Dark Energy
U{179/181}	2601/2761	179.030	0.03021		
U{191/193}	3645/3863	191.029	0.02930		
U{197/199}	4294/4549	197.029	0.02906		
Higher Twin Prime Metaverses					

The premise is that the larger the  $\alpha_m$  values have stronger EM force, while those with lower  $\alpha_m$  values have less EM force. What this means for our FSC Model universe is outlined below.

- Baryonic Matter, highlighted in green, represents EM forces stronger than  $\alpha_{137} = 0.036$ . The presumption is that the stronger the EM force, the more tightly it binds matter & energy, giving our universe its quantum-level chemistry and physics.
- The table row highlighted in yellow represents electromagnetic radiation (photons of light) free from baryonic internment and able to travel through space. This is where the EM value of  $\alpha_{137}$  is too weak to bind with matter but can transfer energy to the lower metaverses, presumably when the  $U\{137/139\}$  EM wavelength matches the quantum energy in a lower metaverse.
- The grey section describes the Dark Metaverses, characterized by decreasing EM forces and the inability to absorb or emit EM radiation or form matter. However, they would have enough EM forces to influence Light and Baryonic metaverses.
- The Dark Metaverses describes a medium through which light must travel and is best described as an ocean of weakly interacting twin prime metaverses  $U\{149/151\}$  and above. Much like the speed of light

slowing when it travels through glass or water, this implies that the Dark Metaverse is a possible determinant for the speed of light.

If the Dark Metaverse had a higher density in the past, it may have reduced the speed of light. The effect would mimic an expanding universe, as described by ChatGPT-3.5, "In this scenario, it could give the illusion of a more accelerated expansion, potentially making it seem like the universe is expanding at a faster rate than it is. This effect could be analogous to the observations that led to the discovery of dark energy, which is thought to be responsible for the accelerated expansion observed today."

IV. THE BIG BANG & DARK METVERSE

The FSC Model aligns with current theories that Dark Matter results from Primordial Black Holes (PBHs) created during the Big Bang[3]. These represent tiny black holes from which our universe evolved. The Dark Metaverse theory supports the possibility of their dimensional property sets D01-D(n) manifesting as primordial singularities. These singularities would range differently in size, each with quantum scale gravity.

Depending on the size and number of these singularities, where the larger twin prime metaverses



represent more cumulative energy, four things can happen:

1. The smallest singularities quickly dissipate their energy into the cosmos via Hawking radiation, creating a cascade of baryonic matter an instant after the Big Bang.
2. The remaining singularities, too large to dissipate the entirety of their energy as Hawking radiation, survive today as Dark Matter. These FSC singularities would have little or no EM forces, cannot interact with light, and have no physical structure except to encapsulate a tiny amount of quantum gravity[4].
3. The Dark Energy conjecture has three possible answers:
  - a) It is an illusion due to a slower speed of light in the past because the Dark Metaverse was denser, as described in the previous section.
  - b) Dark Energy is due to PBHs emitting Hawking radiation faster now than in the past and possibly increasing as the density of Dark Matter decreases and the universe cools.
  - c) or both.
4. Lastly, early in the universe's evolution, the largest singularities would coalesce into Black Holes and be the focal points in forming stars and galaxies.

This process describes our universe's formation much like liquid droplets (Coacervates) in water[5], which involves dissolution into the surrounding media, possible phase separation, and, eventually, a state of equilibrium in a turbulent system.

## V. CONCLUSION

The FSC Model represents a conceptual description of the quantum nature of our universe based on the idea that set theory can replicate the value of the Fine Structure Constant  $\alpha = 137.036$ . Mainly, it provides a Python algorithm [6] for fractionating the value of  $\alpha$  into prime number property sets where  $\alpha = 137$  and  $\alpha = 139$  and forming a hybrid metaverse that mathematically matches the observed  $\alpha = 137.035999206$ . The theory is that these property sets give a granular understanding of implied quantum states of matter and energy. It does not alter existing sciences but potentially provides a theoretical scaffolding that defines the universe.

The FSC theory presumes that the Fractional Coupling Constant for  $U\{137/139\}$   $\alpha_{137} = 0.036$  represents the true EM force and that these  $\alpha_m$  forces can be calculated for all the twin prime metaverses. These EM forces present a new paradigm for understanding Matter, Dark Matter, and Dark Energy.

The FSC Model supports the theory that an array of primordial twin prime singularities may contribute to the gravitational force we call Dark Matter. Dark Energy is due to an increasing speed of light or an

accelerating dissipation of Hawking radiation from Dark Matter as the universe expands.

The FSC Model provides an abstract perspective of our universe based on classical math, set theory, and deductive reasoning for a magical number ( $\alpha$ ) that previously defied scientific inquiry. It is not intended as a proof of concept but as a novel approach for aligning a conceptual model with the science that describes our universe.

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