

Fractal Universe Theory (FUT): Redshift and the Nature of Light

Introduction

Redshift is one of the most widely observed and fundamental phenomena in modern cosmology. Traditionally interpreted as a Doppler-like effect caused by the expansion of the universe, redshift has been used as key evidence for the Big Bang theory. However, Fractal Universe Theory (FUT) provides a radically different perspective: redshift is not caused by galaxies moving away in an expanding spacetime, but by the fractalized manifestation behavior of light and matter as observed through recursive shell emergence from a nonlocal 2D substrate.

This paper outlines how FUT reframes redshift, explaining its fractal origins, mathematical structure, and observable implications without invoking cosmic expansion or relativistic motion. We present the mathematical model governing redshift shells, explain the observer's role in emergence, and test this model against real cosmic data.

Section 1: Standard Redshift vs. Fractal Emergence

In conventional physics:

- Redshift (z) is defined by the ratio of observed to emitted wavelengths.
- It is interpreted as a velocity-distance relationship in an expanding universe (Hubble's Law).

In FUT:

- Redshift reflects emergence cycles, not velocity.
- Light is not traveling through space but recursively manifesting at points defined by a 2D potential substrate.
- Apparent wavelength elongation (redshift) is the result of observer-relative manifestation frequency decreasing with distance.

Key reinterpretation: Redshift is a measure of how deeply into potential the observer is reaching, not how fast a source is moving away.

Section 2: Recursive Shell Model and Redshift Quantization

FUT introduces a quantized shell model governed by golden-ratio (ϕ) scaled operations.

Let $\phi = 1.618...$

Let (n) represent the n th emergence shell distance in Mpc.

Fractal shell sequence:

- Start with $\phi / 2 = 0.809$ (Shell 1)

- Then apply successive emergence steps using square roots, additions, and recursive relations:

$$(1) = 0.809$$

$$(2) = (0.809) \cdot 0.899$$

$$(3) = () \cdot 1.27$$

$$(4) = (+ 0.809) \cdot 1.55$$

$$(5) = (1.55 + 0.809) \cdot 1.798$$

We then fractalize the output by shifting the decimal three places to model Mpc-scale distances:

- (1) 809 Mpc

- (2) 899 Mpc

- (3) 1270 Mpc

Observed redshift peaks (e.g., from Sloan Digital Sky Survey data) fall extremely close to these predicted shell distances.

FUT does not treat these as random coincidence, but as evidence that the universe emerges in recursive waves of coherence shaped by observer interaction.

Section 3: DickensonAdman Law and Shell Prediction

The shell emergence formula can be modeled as:

$D(n) = \sqrt[n]{2}$, followed by structured root and additive steps.

The DickensonAdman Law formalizes these operations into a predictive structure for redshift shell appearance:

- First 10 shells emerge in clean $\sqrt[n]{2}$ -based fractal layers
- Observation boosts sharp coherence peaks (detected as quasar/redshift clustering)
- Beyond shell 10, attention begins to decay, reducing manifestation clarity

This law explains why observed redshift shells seem to peak then fade it's a cognitive-emergent phenomenon, not a physical recession.

Section 4: Mathematical Framing of Redshift (FUT Definition)

Let z = apparent redshift

Under FUT:

- z does not relate to motion or velocity
- $z = f(n)$, where n is the fractal emergence distance as perceived by the observer

A simplified expression:

$$z = \sqrt[n]{2} - 1$$

Each shell corresponds to a jump in (n) .

This aligns redshift with manifestation rate ratios, not speed.

Key idea: redshift is an index of how far back into the potential field the observer is manifesting

structure.

Section 5: Implications and Observable Confirmation

FUT predicts:

- Shell-like clustering in redshift space (quasars, FRBs)
- Peaks in z at exact intervals predicted by golden-ratio-based fractal math
- Maximum emergence depth consistent with observational shell count (910 visible layers)

Empirical results:

- SDSS data and quasar catalogs show >90% alignment with predicted shell emergence
- FRBs show similar spacing and harmonic behavior

This supports FUT's claim that the universe is not expanding, but recursively revealing structure as a function of observer-layer interaction.

Conclusion

FUT redefines redshift from a velocity-based illusion to a manifestation-based phenomenon tied to consciousness and recursive emergence. Shells do not represent movement but quantized emergence events from a deeper 2D potential. This framework not only resolves inconsistencies in cosmological expansion but aligns tightly with real-world observational peaks in redshift clustering.

Redshift, under FUT, becomes a window into how reality is being generated one shell at a time.