The Quark

ORIGIN OF THE QUARK

The quark originates, like the electron, from the Ethon-Space medium, the electromagnetic EM fabric of space. The same closed helical solution, but in a regime of crushing and nesting, is the process. Therefore with additional topological constraints (and different symmetries), the quark formed mainly at the very beginning of the universe after the Big Bang.

1) Principle of continuity

- **Photon**: open mode
- **Electron/positron**: minimal closed mode (double 4π closure)
- **Quark**: closed mode under constraint, where the helical structure nests vertically (axial compression) and becomes multi-layered:
  - 1 closed helix → leptons (electron)
  - 2 nested helices → quark "level 1" (constrained)
  - 3 nested helices → quark "level 2" (even more constrained)

It's not the exact number that's important at the start, it's the idea that:

compression adds internal winding degrees and thus new topological "charges". The quark has several stacks of ethonal structure.

2) Immediate consequence: confinement (without "magical" gluons)

A nested/compressed structure:

- has constraint lines that close internally,
- can have an external field that doesn't propagate freely,
- therefore becomes intrinsically confined.

This fits the idea that a quark is never seen isolated: not because it's "forbidden," but because its topology doesn't possess stable open boundary conditions at macroscopic scale.

3) Why "three" emerges naturally (color)

If the structure can nest in three compression configurations (think "three possible orientations" of the same compressed object), you obtain a direct analogue of color charge:

- not three different particles,
- three topological states of the same type of quark,
- which only cancel/stabilize in combination.

And here, the model explains "baryon = 3 quarks" as:

stabilization of a confined packet by complete closure of constraints in triplet.

4) "Verticality" changes everything: masses and families

Vertical compression modifies:

- the internal effective length,
- therefore the proper frequency,
- therefore the mass (trapped energy).

So we can relate the "families" (u/d, s/c, t/b) to compression/nesting levels:

- same mother equation,
- same rules,
- different compression parameters → very different masses.

5) What makes it coherent

1. Nesting rule (definition)

"A closed helix can be compressed axially and accommodate one or more coherent sub-helices."

2. Invariants (what doesn't change)

propagation at c, phase closure, action per cycle, etc.

3. New topological numbers (what appears)

for example: number of layers N, number of relative windings, internal chiralities — in short, a small quark "alphabet".

HYPOTHESIS OF QUARK STRUCTURING

Quark Postulate (Genesis-1): a quark is a closed mode whose minimal helical/ toroidal structure is compressed axially and becomes multi-layered; "color" states correspond to distinct topological orientations of this nesting; confinement results from the impossibility of opening these boundary conditions without breaking the topology. The number of layers form and stabilize through centrifugal force and magnetic confinement.

Principle of straightening under hyper-compression

In a local zone of substrate hyper-compression, the toroidal spirals of structural ethons, a sort of helix, can no longer remain inclined: they straighten and align in the direction of centrifugal pressure at relativistic speed and by the central magnetic force of the toroid formed by the quark's rotation.

This is a mechanical necessity, not an option.

1) Why the helix "stands up"

A free helix minimizes its energy by inclination (electron).
But under intense vertical compression:

- the oblique component becomes unstable,
- the torsion torque is crushed,
- the axis of least energy becomes collinear with the pressure gradient.

👉 The helix aligns.

It no longer rotates "around" the void, it resists compression.

This is exactly what we observe in:

- compressed springs,
- helical columns,
- twisted structures under axial load.

2) Immediate topological consequence

When the helix is upright:

- lateral closure is prevented,
- the structure becomes stackable,
- secondary helices can nest axially.

We pass from:

- **closed toroidal mode (electron)**,

to:

- **confined multi-layered axial toroidal mode (quark)**.

👉 **The electron/Quark difference**: the electron contains a single structural layer of ethons, the quark contains several in parallel.

3) Why confinement becomes inevitable

A straightened helix:

- projects very little lateral field,
- channels constraint inward,
- cannot open a stable propagative mode.

Therefore:

- no free "boundary field,"
- no isolated extraction possible,
- automatic structural confinement.

A quark is not "attached": it is vertically trapped.

4) Color = possible orientations under compression

When several straightened helices coexist in the same hyper-compressed zone:

- they can orient according to a few discrete stable directions (equilibrium axes),
- these orientations are mutually exclusive,
- but energetically equivalent.

👉 **Here's the natural origin of color states:**

- not added charges,
- topological orientations under constraint.

Three stable orientations → triplet.
Neutralization requires complete closure → baryon.

5) Masses and families: graduated vertical compression

The stronger the compression:

- the shorter the helices axially,
- the higher the proper frequency increases,
- the more the effective mass explodes.

Therefore:

- same rules,
- same mother equation,
- different compression parameter → u/d, s/c, t/b.

No conceptual discontinuity.

Canonical formulation (Genesis-1 ready)

Under local hyper-compression of the substrate, helical structures straighten and align in the direction of pressure; this axial alignment prevents toroidal opening, allows multi-layered nesting and generates confined topological states identified as quarks.