The pion and the paradoxes of the quantized cube

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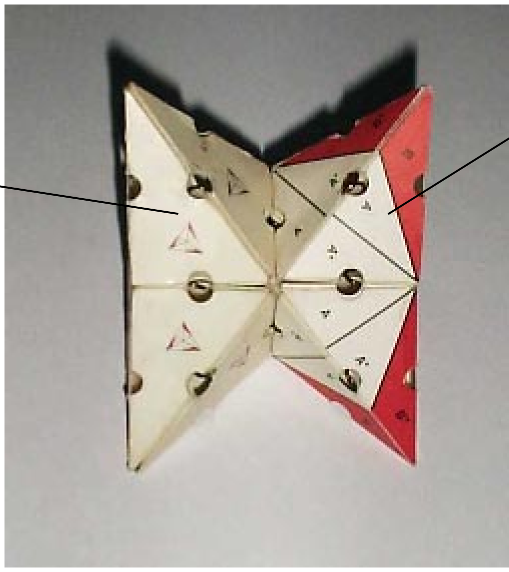
The cube's quanta composition

The cube comprises 24 Mites. The Mite anti-Mite congruence makes it possible to alter the internal quanta composition of the cube, from a neutral to a positive or negative composition. The basic neutral (zero spin) cube is a tetrahedron surrounded by four 1/8th octahedra (tetra + half-octahedron).

The quantized cube comprises 72 quanta modules in all – 48 A-quanta modules and 24 B-quanta modules, corresponding to 24 Mites. The quantized cube might also be split into semi-cubes (spinners), 1/3 cubes, octets or semi-Couplers.

Diagonally the cube might be split into two octets and a spinner representing a complementary concave/convex interface.

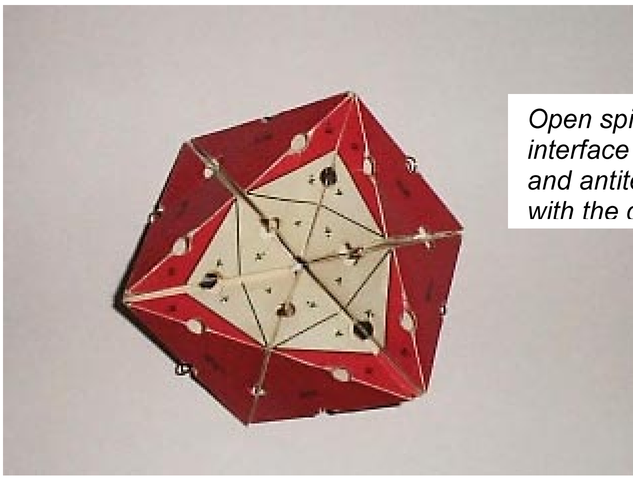
Further examination of the cube shows that it can be interpreted as a combination of eight partially overlapping octets. The neutral cube is a combination of four open octets and four closed octets. Each of the neutral cube's corners is a merger of three open octets and one closed octet or vice versa.



Partially overlapping octet and antioctet. This shows that the octet (pion) is its own antiparticle. The non-interference pattern suggests a relationship with electromagnetic interaction.

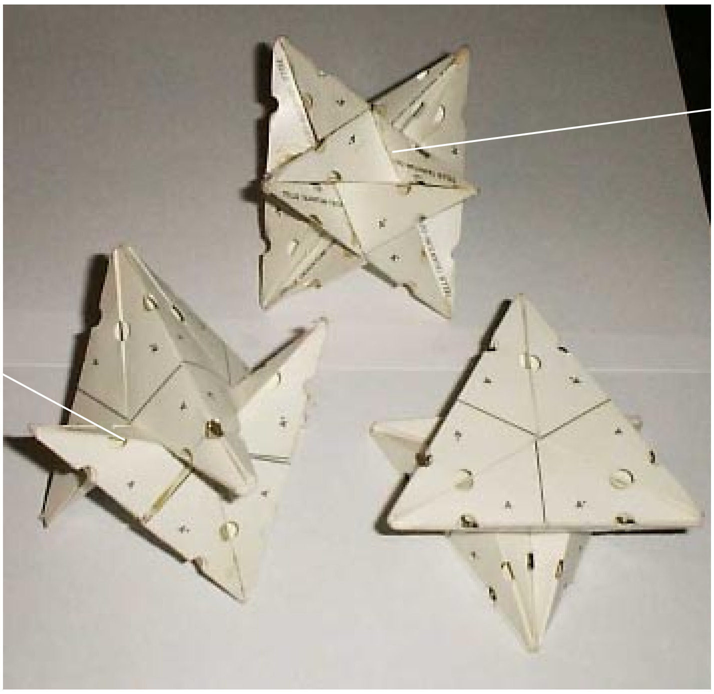
The central spinner might also have open or closed composition - matching or not matching the connecting octet's quanta composition. The spinner therefore provides a way of altering the energetic coupling along the cube's diagonal.

The formation of the internal tetra-antitetra leads to a paradox. If 24 positive (or negative) Mites are used to build the cube it will lead to the formation of an overlapping internal tetra-antitetra pair. Half of the Mites will connect to the tetrahedron and the other half will connect to the antitetrahedron. This will cause a cancellation of the charge. Even though the composite individual components are positive (or negative), the end product is neutral.



Spinner plus octet defines the 3/4 cube. The importance of this component is that it offsets the balance between the internal tetra-antitetra pair. The 3/4 cube can be divided into three octets connected to the tetrahedron and one octet connected to the antitetrahedron. These four octets partially overlap within the 3/4 cube. The 3/4 cube helps to drive energy from the tetra to the antitetra or vice versa. The spinner isolates the tetrahedron from the antitetrahedron.

Depending on the cube's composition of Mites, the internal tetrahedron will show various types of excitations. The internal A-quanta modules form a partially overlapping tetra-antitetra pair. The cube's antitetrahedron is defined if positive and negative Mites are interchanged within the cube. This alters the orientation of the internal tetrahedron.

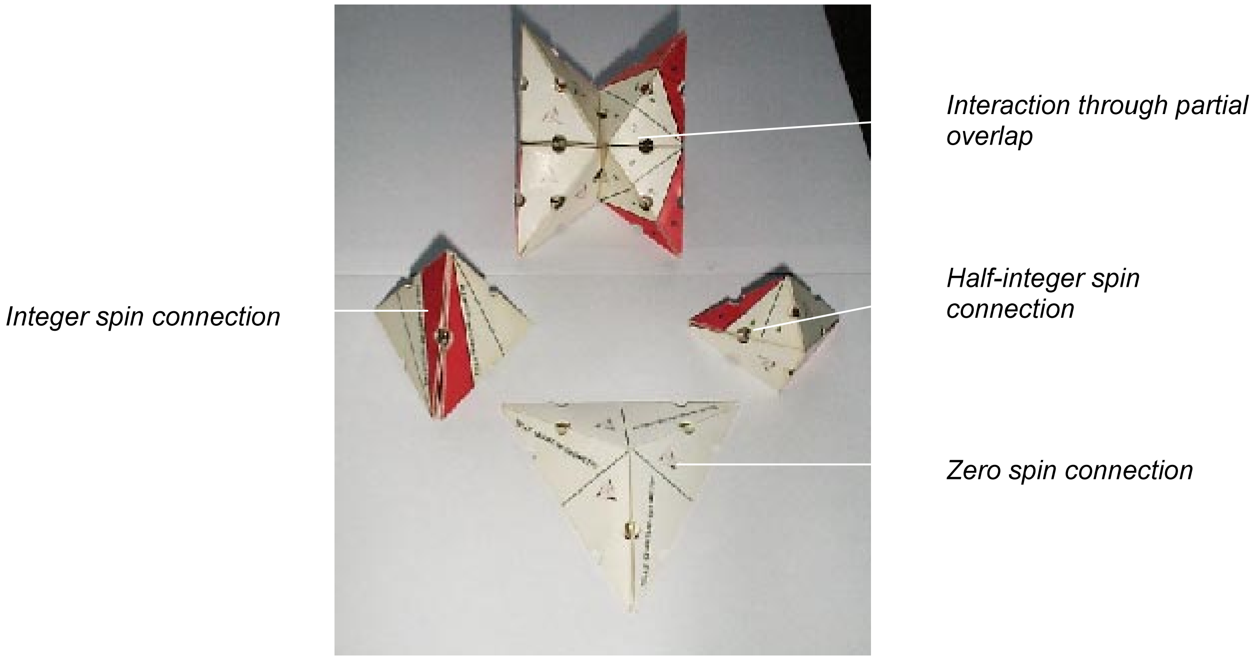


A cube's spin is represented by the internal tetrahedron. If the cube is composed of 24 positiv Mites or 24 negative Mites, an internal stella octangula is formed representing a partially overlapping tetra-antitetra pair. In a neutral cube composed of an equal number positive and negative Mites the internal tetrahedron is twisted creating an partially overlapping tetra-antitetra pair. Intrinsic spin is represented by the interface between tetra and antitetra. <u>The limited range of the tetra-antitetra interaction suggests a relationship with strong interaction</u>.

Intrinsic spin and partial overlap

The interfaces between composite Mites define the quantized polyhedron's intrinsic spin. Spin causes the polyhedron to form a left or right hand twist in relationship to its spinless configuration. Spin is a consequence of the Mite - antiMite congruence. Spin occurs at the interface between Mites of equal sign. Integer spin is present when the B-modules of two positive or negative Mites completely define the triangle of interface. Half-integer spin is occurs when the two Mites B-modules partially overlap at the triangle of interface.

Partial overlap as represented by the cube's octets can be seen as a non-interference mechanism enabling a single octet to move within the cube without self-interference or alternatively the occupation of the cube by many octets of different frequencies. The quantized cube represents paradoxes that give insight into the nature of strong and weak interaction.



Four types of interactions take place in the quantized field representing different ways to connect the constituting Mites. Zero spin connection is the quantized field's ground state. The remaining three interactions represent excitations of the quantized field. For a given particle many of these interactions might be present. Characteristic for the pion is interaction through partial overlap.

The coupler defines the cube's interaction with the surrounding quanta modules.

Coupler with integer spin. The disk formed by the B-modules provides an energetic flow channel. The coupler is an interface between two cubes.

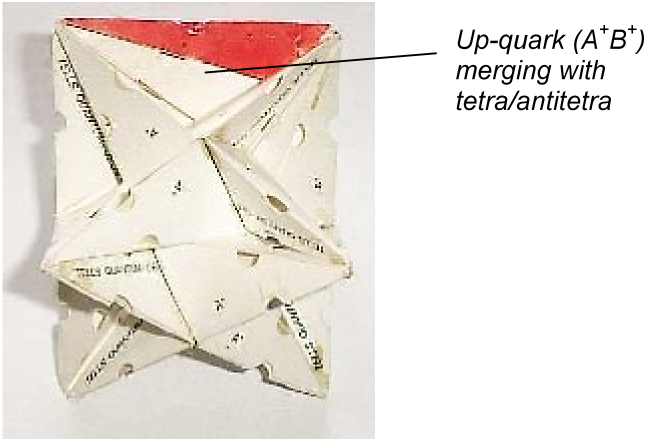
The cube and the quarks

The Mite's quanta composition is $B^+A^+A^-$ or $B^-A^-A^+$. The positive Mite is congruent with the negative Mite. The corresponding quark denotations are ud or $\underline{ud}$. The problem with these two combinations is that they lack intrinsic spin and hence cannot represent a particle. The combinations u$\underline{d}$ or $\underline{u}$d on the other hand are geometrically impossible since they require all-space filling by the combination $A^+B^+A^+$ or $B^-A^-A^-$ which is also impossible. What then does the combinations u$\underline{d}$ or $\underline{u}$d represent? Quantum-geometrically the denotation u$\underline{d}$ implies a paradox. This denotation requires the A^+B^+ modules to be half-integer spin connected with an A^+ module but there is no excess of A^+ modules present in a cube defined by positive Mites.

However when the cube is completed the antitetrahedron is formed and the presence of the antitetrahedron alters the sign of 12 of the A-modules from positive to negative. The pion therefore cannot be formed without the presence of the antitetrahedron. On the other hand the antitetrahedron cannot exist since tetra and antitetra will annihilate.

The dilemma can be solved if the cube is separated into a real and a virtual part. When the virtual cube is formed the real quanta modules (quarks) start to interact with virtual quanta modules.

Another option is to reduce the energy density of the cube to a point where the cube is defined by the self-interference pattern of an entrapped octet transient within the cube.



Fine structure of positive pion (u$\underline{d}$). The u-quark is spin-connected with the antitetrahedron. The individual components of the antitetrahedron are the $\underline{d}$ quarks. The u-quark's interface with the tetra is without spin. The individual octets loose their individuality in the charged cube - a possible relationship with weak interaction.

The complexity of the cube is revealed if an octet is dropped in an empty cube. Since the cube is omnisymmetric the octet has eight different locations to choose from within the cube. Which positions will it chose. It can choose all positions at the expense of the energy density. If all are chosen the energy density will drop to 1/4th of the original. If energy density is maintained the octet will move from one position to another in a self-overlapping pattern.

Annihilation can be avoided if the activation energy oscillates within the cube in order to avoid both the tetrahedron and the antitetrahedron. This oscillation will only delay the inevitable escape or destruction of the octet/pion.

The cube and the meta-machine

If particles are machines what is the pion's modus operandi? From the above reasoning we conclude that's there's something restless about it. It must move about in order to avoid self-annihilation. This suggests that the pion is an oscillator confined to the cube. It also suggests that the pion eventually will decay through the cube's faces.

The cube's meta-machine interaction matrix suggests that the pion oscillate along the cube's diagonal as a result of the interaction between the tetrahedron and the antitetrahedron.

The cube as a whole defines tetra-antitera interaction. The 3/4 cube causes an offset in charge between the tetrahedron and the antitetrahedron. The spinner (1/2 cube) represents the interface between tetra and antitetra.

The pion interaction matrix				
Cube	Outflow		Influx	*3/4 cube*
3/4 cube	Out-scattering	Interface	In-scattering	*1/2 cube*
1/2 cube	Out-leakage	Interface	In-leakage	*Octet*
Octet	Expansion	Transmission	Compression	*Mite*
Mite	Angular dispersion	Isolation	Emission	A^+B^+
A^+B^+	Recombination		Excitation	A^- *(Mass)*

The entrapped octet represents the cube's real component as opposed to the virtual part of the cube. Alternatively the cube can be seen as a meta-state with real and virtual parts. The octet finally is defined by the constituting quarks represented by the A- and B- quanta modules.