The Pattern Pieces

Folder 16

The Pattern Pictobricks

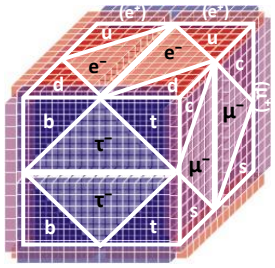
Pictobricks represent the elementary particles of the Standard Model.

Pictobricks are simple geometric symbols (pictographs) for the elementary particles/fields of the Standard Cube which is a geometric Standard Model.

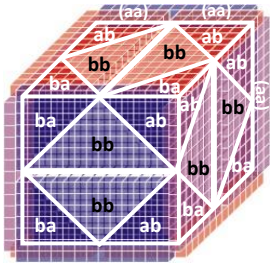
The Standard Cube is the equivalent of the Pattern Cube which consists of the Pattern 'bricks' that are identified by the terms in the Pattern equation, i.e. aa, ab, ba, bb.

The standard pictobricks represent fermions (the electrons, muons and taus with their anti-particles and also the quarks with their anti-quarks). The empty (virtual) spaces in between the bricks represent the bosons (photons, gluons, etc.).

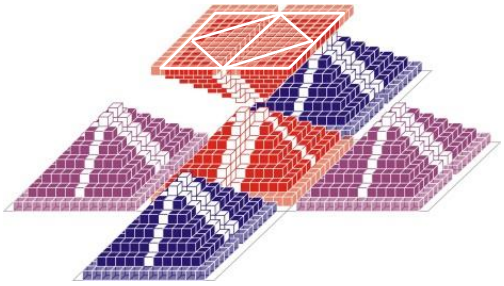
The Standard Cube



The Pattern Cube



The Opened Cube



The pictobricks could be combined into modules, pairs, triplets, quads and cubes. A proton, for example, is a combination of a quark triplet that contains a gluon.

The pictobricks were derived from the Pattern cube modules that are geometric structures formed by the small cubes (cells) that correspond to the numbers in the terms (aa, ab, ba, bb) of the squared Pattern equation. The numbers were obtained by substituting the a and b variables with the Pattern code values.

This folder presents the four main bricks (aa, ab, ba, bb) as well as combinations thereof. Brick descriptors, such as, squared, linear, compact and simplified, are used to identify the different brick combinations.

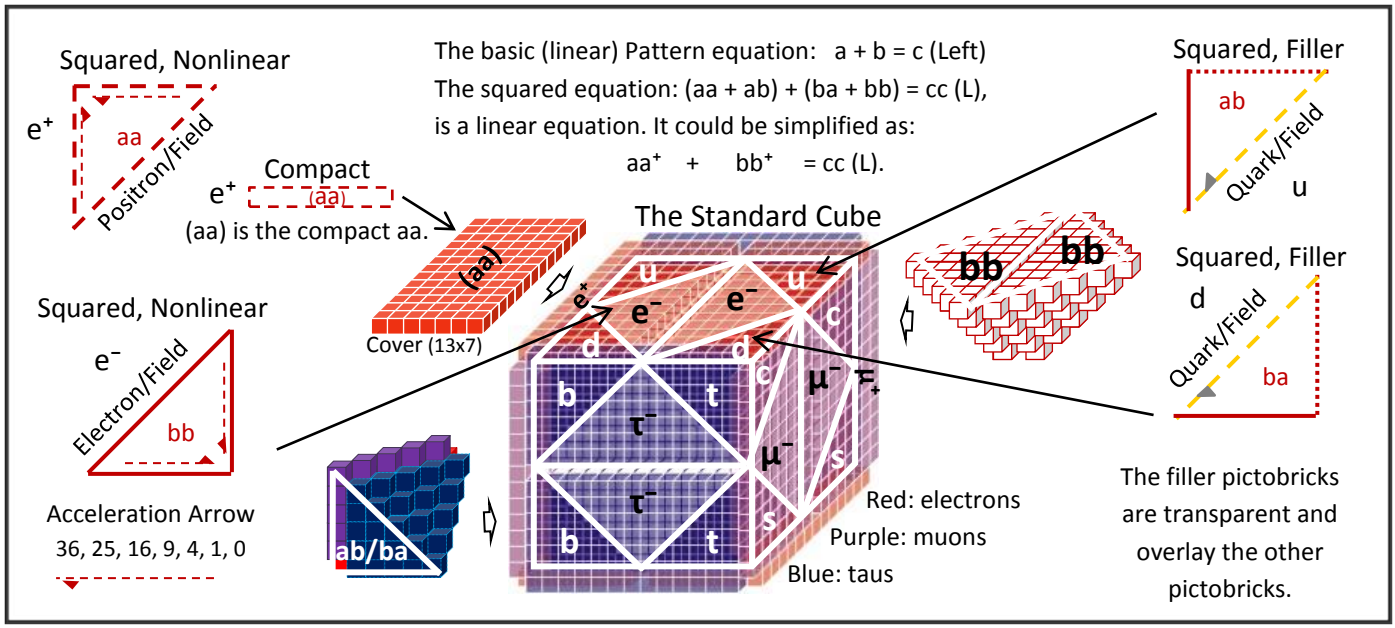
The definitive set of bricks and their combinations are part of Map 2 *The Standard Model Map*: *The Standard Bricks*.

Pictobricks could be used to construct a variety of other physics models apart from the Standard Cube. The pictobrick concept is a major step towards the simplification of the Pattern concepts and a consequently more general appreciation of the Pattern.

The Pattern Pictobricks, was published in thepatternbook.com on 30 June 2020

The Main Pictobricks

Four main pictobrick types are derived from the terms of the squared Pattern equation. These are the aa, ab, ba and bb pictobrick types.



A brick consists of a number of cells (cubes) which is the same as the numbers (values) of the four types of equation terms. The respective numbers for the different Pattern values are given on the right.

The aa brick, for example, consists of six layers, each a with different number of cells. The layers have 36, 25, 16, 9, 4 and 1 cells for a total of 91 cells. However, when the (compact) Cube is formed the aa brick is compacted (compressed) into a 13 x 7 (=91) slab. The reason is that the aa bricks and the bb bricks would otherwise overlap. This overlapping is not possible in 3D but overlapping is possible in 4D where the pre-compact cube would be formed.

Squared Pattern Equation

aa + ab + ba + bb = cc
36 + 0 + 0 + 36 = 36
25 + 5 + 5 + 1 = 36
16 + 8 + 8 + 4 = 36
9 + 9 + 9 + 9 = 36
4 + 8 + 8 + 16 = 36
1 + 5 + 5 + 25 = 36
0 + 0 + 0 + 36 = 36

The ab/ba bricks are also affected by the compacting process but they are not compressed as such, they are only rearranged. This is shown on P16:3.

The bb brick, for example, consists of 91 cells which also represents the bb field, not only the bb particle. This brick type, therefore, also serves as an electron field with cells that each could contain an electron. (The Symmetric Periodic Table of electron-type atoms comprises four such electron fields.)

Pythagoras Equation

The Pythagoras equation is a subset of the Pattern equation, i.e. aa + bb = cc or, $a^2 + b^2 = c^2$. The combination of an *aa* brick and a *bb* brick (the module) is not a linear combination, such as the module combination of the *aa, ab, ba, bb* bricks. (See next page, P16:3.)

The Pattern Boost

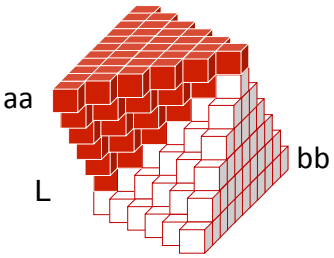
The boost phenomenon arises from the fact that the Pattern values could not be at a minimum simultaneously. The duonity values of the duonity module do not contain a zero (a = 6,5,4,3,2,1 and b = 1,2,3,4,5,6) and they represent the Pattern uncertainty principle that is explained on Map 4 *The Creation Map* and its accompanying guide, *The Creation Map Guide.*

Pictobrick Modules

Pictobrick modules are combinations of the main pictobricks. The main combinations are aa,bb; aa,ab,ba,bb and ab/ba/ab (triplets). Descriptors are used to describe the differences in the modules.

The Pythagoras equation: $a^2 + b^2 = c^2$, or aa + bb = cc (cc not a constant). It is a nonlinear equation.

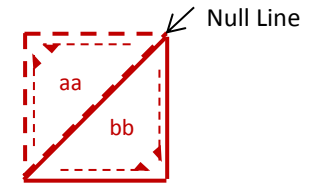
Nonlinear Module



Number of Cells

aa \ bb	0	1	4	9	16	25	36	= cc
36	11	9	7	5	3	1	0	= 36
25	9	7	5	3	1	1	1	= 26
16	7	5	3	1	1	3	4	= 20
9	5	3	1	1	3	5	9	= 18
4	3	1	1	3	5	7	16	= 20
1	1	1	3	5	7	9	25	= 26
0	1	3	5	7	9	11	36	= 36

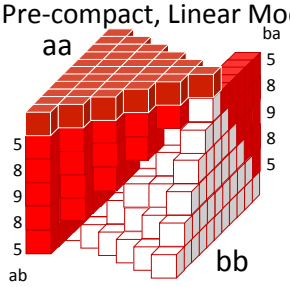
Nonlinear Module



Note the dotted acceleration arrows

The Squared (Linear) Pattern equation (Left only): $(a + b)^2$ = aa + ab + ba + bb = cc (cc a constant)

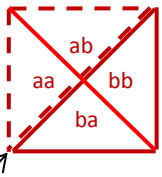
Pre-compact, Linear Module



The Linear Squared Pattern Equation.

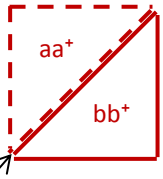
(aa + ab) = 6xa	(ba + bb) = 6xb	= cc
36 + 0 = 36 (=6x6) = 36	0 + 0 = 0 (=6x0) = 0	= 36
25 + 5 = 30 (=6x5) = 30	5 + 1 = 6 (=6x1) = 6	= 36
16 + 8 = 24 (=6x4) = 24	8 + 4 = 12 (=6x2) = 12	= 36
9 + 9 = 18 (=6x3) = 18	9 + 9 = 18 (=6x3) = 18	= 36
4 + 8 = 12 (=6x2) = 12	8 + 16 = 24 (=6x4) = 24	= 36
1 + 5 = 6 (=6x1) = 6	5 + 25 = 30 (=6x5) = 30	= 36
0 + 0 = 0 (=6x0) = 0	0 + 36 = 36 (=6x6) = 36	= 36

Linear Module



Inversion Line

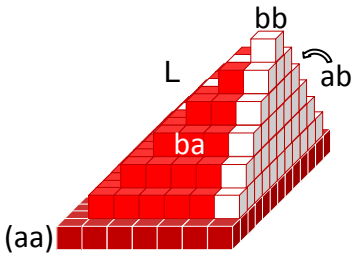
Simplified Linear Module



Inversion Line

A combination of terms (aa + ab) into aa^+ and (ba + bb) into bb^+ yield the simplified linear module above. The inversion line is where the aa^+ values of the equation converts into bb^+ values, and vice versa. Note that a null line and an inversion line are not the same type of lines because nonlinear terms cannot convert into each other.

Compact, Linear Module

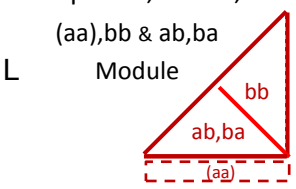


Cover 13x7 cells

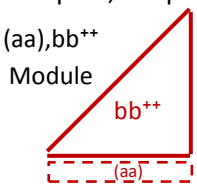
Number of Cells in Compact Module

							0
						1	1
					3	3	6
				5	5	5	15
			7	7	7	7	28
		9	9	9	9	9	45
11	11	11	11	11	11		66
13	13	13	13	13	13	13	91 Cover

Squared, Linear, Compact

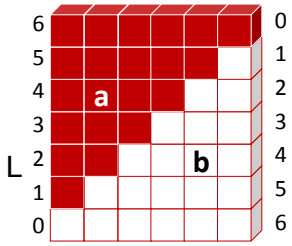


Compact, Simplified



The basic Pattern equation (Left) a + b = c is linear because the sum c is a constant.

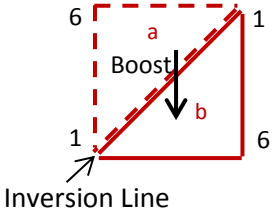
Basic Module



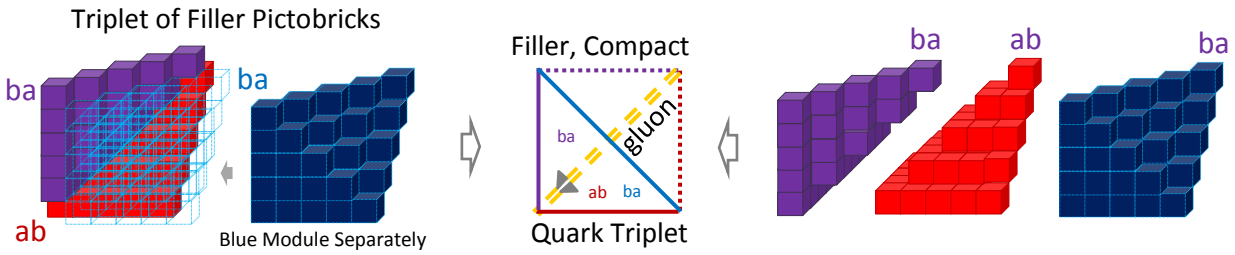
Number of Cells

a \ b	0	1	2	3	4	5	6	b = c
6	1	1	1	1	1	1		0 = 6
5	1	1	1	1	1	1		1 = 6
4	1	1	1	1	1	1		2 = 6
3	1	1	1	1	1	1		3 = 6
2	1	1	1	1	1	1		4 = 6
1	1	1	1	1	1	1		5 = 6
0	1	1	1	1	1	1		6 = 6

Basic Boost Module



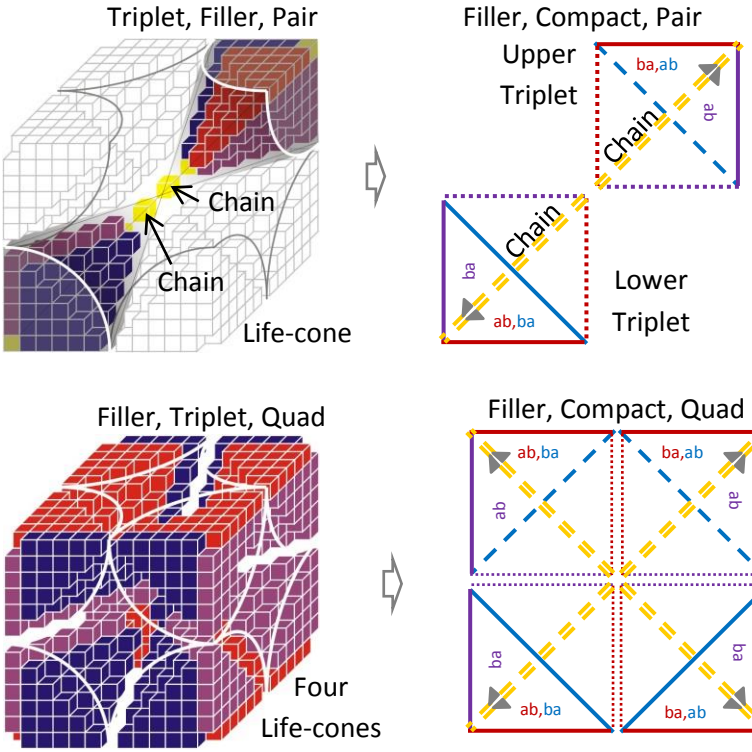
Pictobrick Assemblies



Life-cones

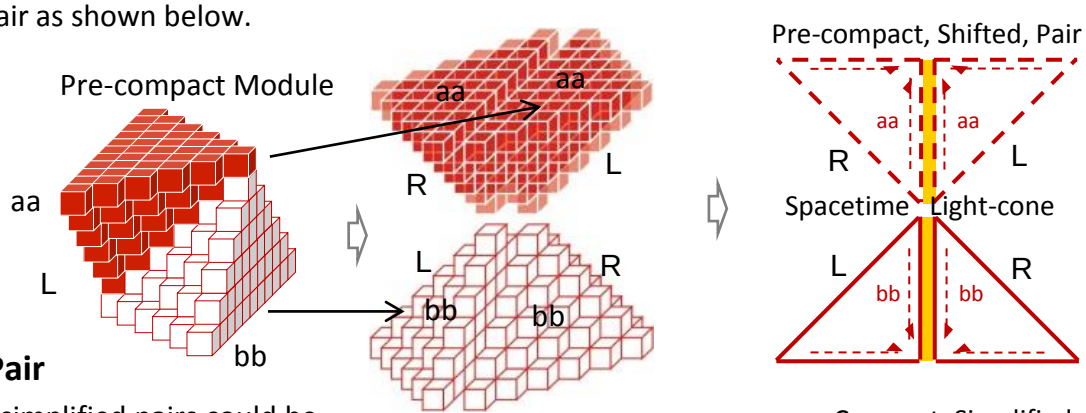
Two triplet filler modules could be combined to form a diagonal pair that is known as a Life-cone. The Pattern cube contains four such Life-cones. A chain with virtual links is embedded in each one of the eight modules of the four Life-cones. Each link represents a codon of the genetic code. See Folder 5 for more on the Geometric Genetic Code.

The pictograph of the four Life-cones of the Cube is shown on the far right.



Spacetime Light-cone

A spacetime type light-cone could be constructed with a squared, nonlinear pair as shown below.

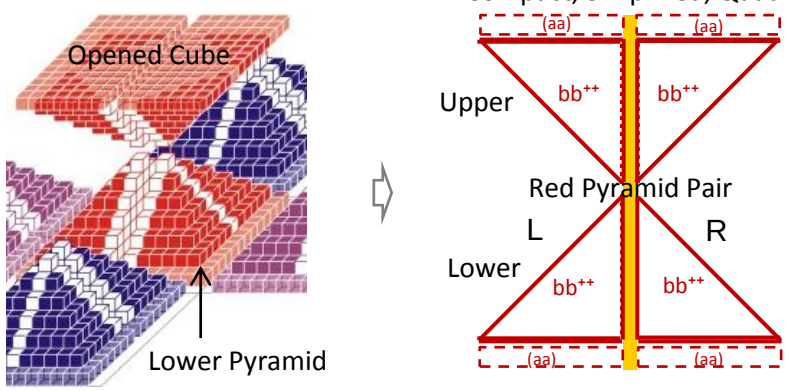


Pyramid Pair

Two linear, simplified pairs could be combined into a compact quad shape, as shown on the right, to form a (red) pyramid pair. Three such pyramids, red, purple and blue, form the Pattern Cube.

Clefts

Clefts are formed between brick pairs. The pyramid pair has an upper and a lower cleft.

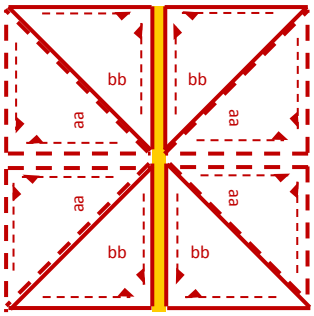


Pictobrick Models

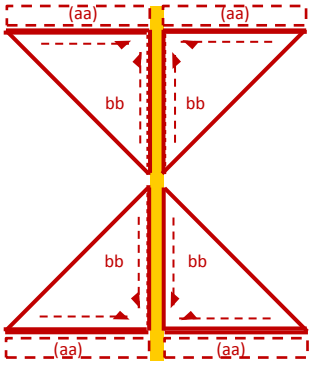
Pictobricks are useful to build various physics models. The main model is the Standard Cube. Other models, such as periodic tables, light-cones and life-cones could also be constructed with different combinations of pictobricks.

Pictoquads

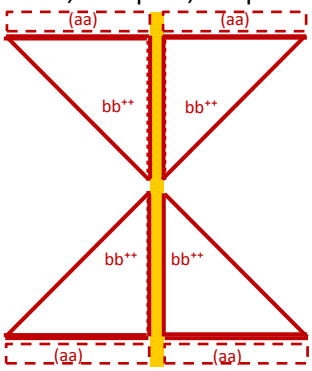
Nonlinear, Pre-compact



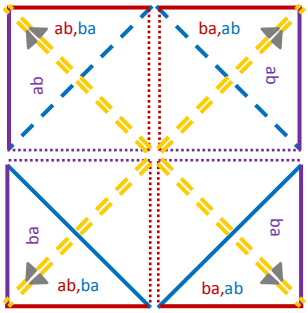
Nonlinear, Compact



Linear, Compact, Simplified

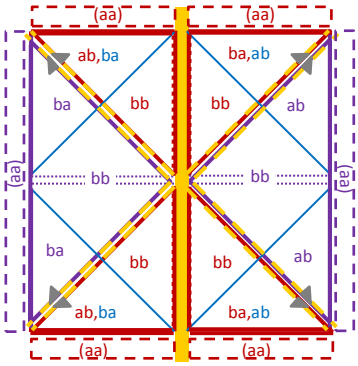


Fillers, Compact

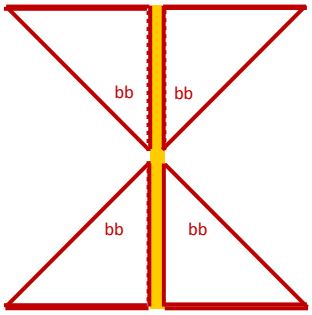


Pictocube Components

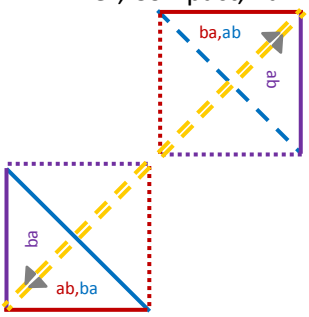
The Compact Pattern Cube



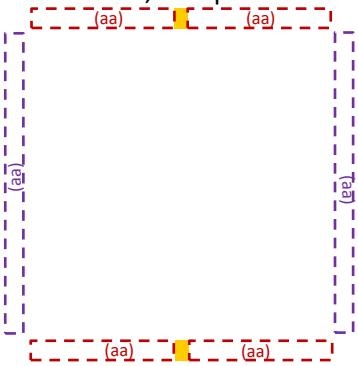
Nonlinear, Compact



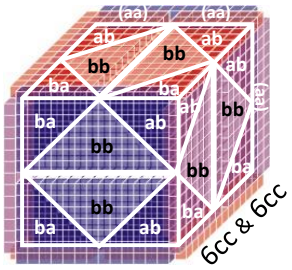
Filler, Compact, Pair



Cover, Compact



The Pattern Cube



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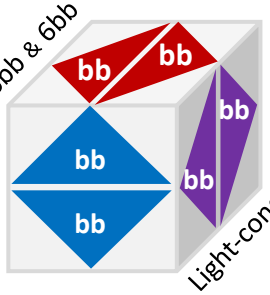

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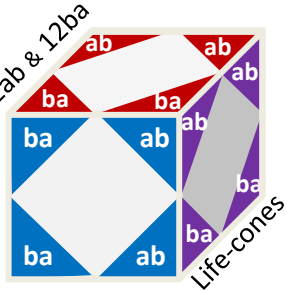

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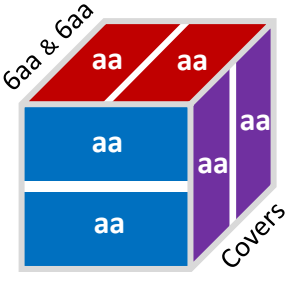
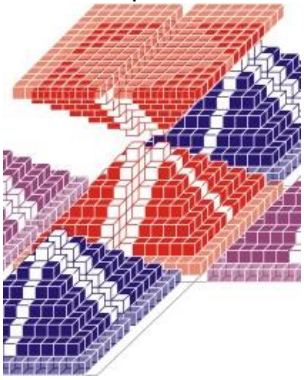
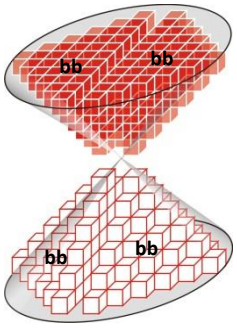


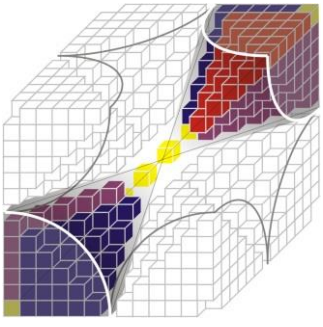
The Opened Cube



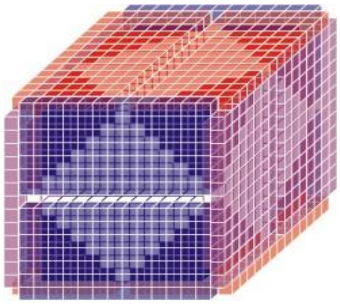
The Pattern Light-cone



Life-cone



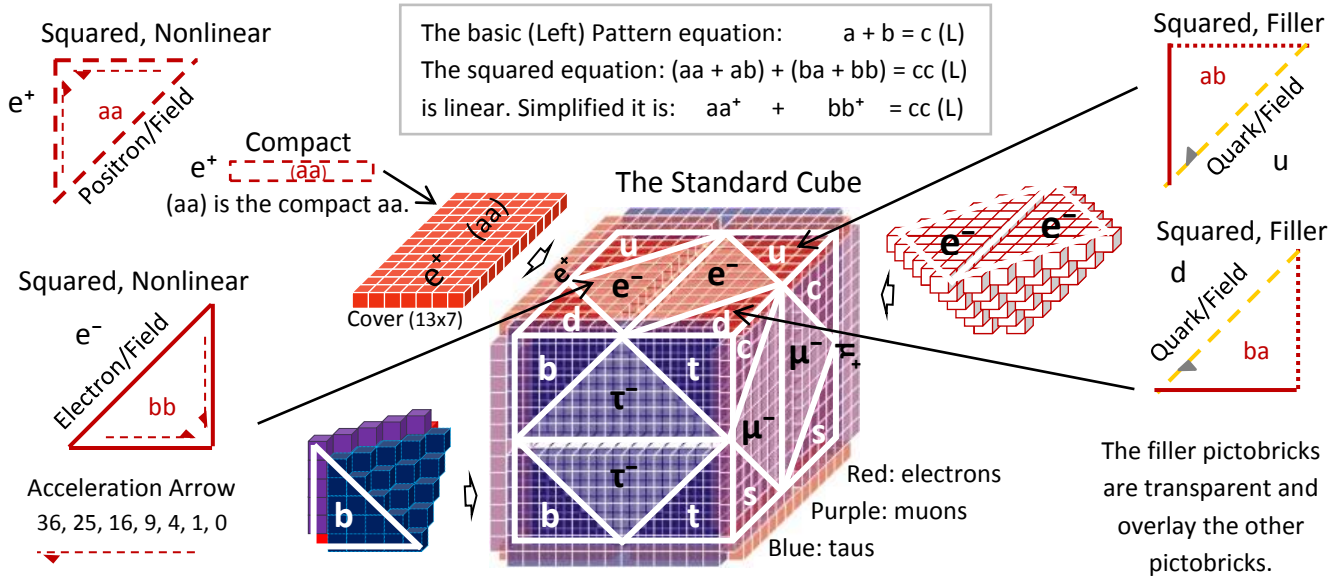
The Transparent Cover



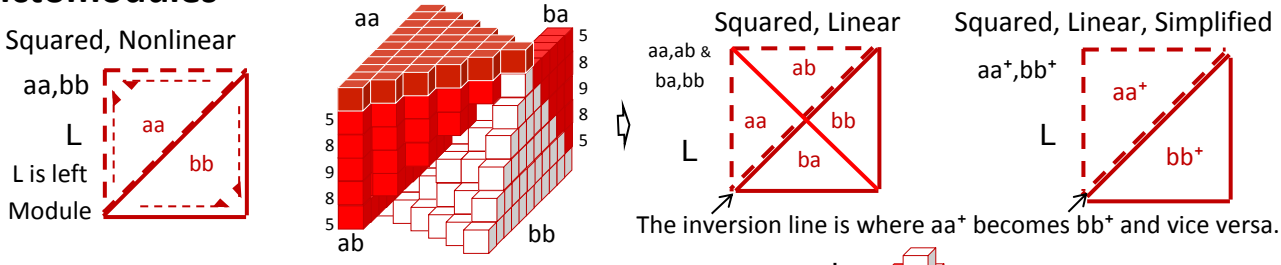
Standard Model Map: The Standard Bricks

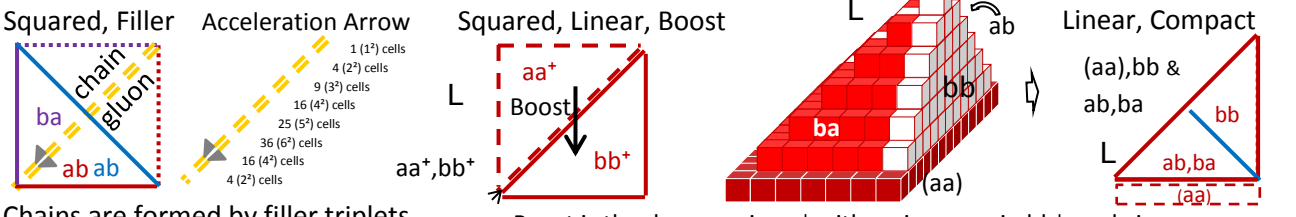
The standard bricks represent the particles of the Standard Model.

Pictobricks are simple geometric symbols for the elementary particles of the Standard Model; fermions (electrons, muons and taus with their anti-particles and quarks) and bosons (photons, gluons, etc.). Red bricks for the 'red particles are used in this part of the map. The Standard Cube is a compact (3D) cube. The pre-compact version of the cube has bricks that overlap in space, which is not possible in 3D.

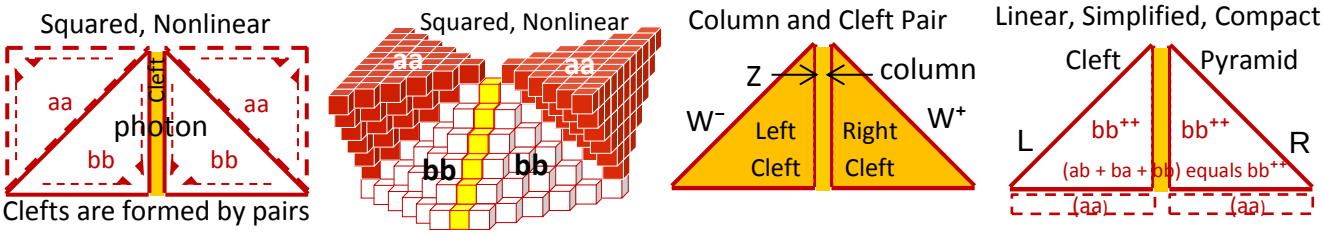


Pictomodules

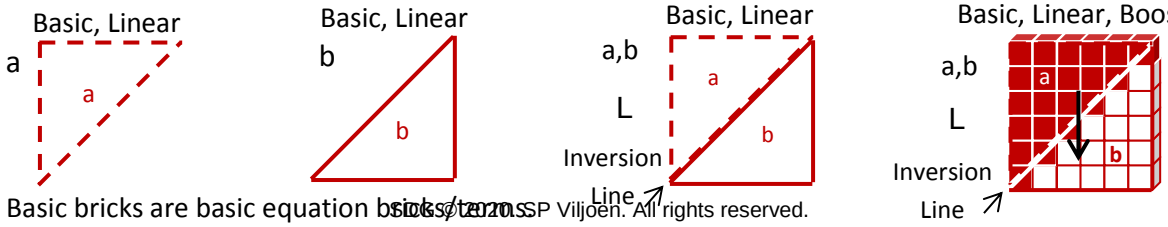




Pictopairs



Basic Pictobricks



See the Pattern Pieces Folder 16 *The Pattern Pictobricks* for detail.