SHIFT IN 4d LIGHT AND SHADOW FIELD ©copyright 2022

d=dimension p=parameter

We pose a galilean reference frame of real space 3d (x, y, z) orthogonal of center C where the dimensions are with the mathematical properties of geometry in space thus with true dimensions of space.
There are two colors of parameters: L and O. The color L is assigned to the element L of the plane space and the color O to the element O of the plane space.

Parameter math	Parameter physics
PL	Propa Light
ML	Movement Light
PO	Propa Shadow
MO	Movement Shadow

One passes from the 3d supposed to the incomplete initial conditions by positioning "a" parallel to "y" passing by C then to the preparation of taking of the parameters by the rotation of axis "a" in right angle of the 2d (a, z) to have "x" and "z" superimposed and "y" and "a" superimposed in the horizontal plane. In these three phases, the parameters are geometrically related in the original "x" and "y" dimensions.

When the 4p parameters are taken, there are two cases. In case 1, the color parameters O PO and MO are transferred from "x" and "y" into "z" and "a" and all the parameters of the case receive a 1 at the end of the name and in case 2, the color parameters L PL and ML are transferred from "x" and "y" into "z" and "a" and all the parameters of the case receive a 2 at the end of the name.
In the next phase, in case 1 and case 2, the dimension "a" is added orthogonally to "y" in the horizontal frame with rotation of the entire 2d (a, z) and the 4-dimensional, 4-parameter valid frames 4d/4p 1 of case 1 and 4d/4p 2 of case 2 are obtained.
For both phases, the taking of the 4p parameters and the horizontal 4d/4p reference frame, the parameters are taken out of the original dimensions at the phase of taking the 4p parameters, and we notice that it is all the parameters with a 1 from case 1 or all the parameters with a 2 from case 2 that were positioned in the original "x" and "y", and not the parameters of case 1 and case 2 mixed together. It is therefore the geometry specific to case 1 or case 2 that allows the properties of the original dimensions to be retained.

So if we merge the two 4d/4p benchmarks into one, we get a 4d/8p benchmark with two parameters per valid dimension with dimensions with the same names "x" "y" "z" and "a", but the case-specific geometry bindings cannot be undone because they protect the properties of the original dimensions, and the parameters still remain geometrically bound by case in the 4d/8p benchmark. When we switch to 4d, the geometry links are made between parameters of different dimensions unlike the geometry in the space we know where the parameters are linked in the dimension. And the only geometry links in 4d are therefore these links by case and the right angles of the 2d fixed since the beginning. Moreover in this 4d/8p frame of reference, we see that the two dimensions "x" and "y" and the two dimensions "z" and "a" are copies in unbound parameters of the original "x" and "y".

In order to establish the links by case, it is necessary to know the phase of taking the 8p parameters just before that of the 4d/8p reference frame, which is obtained by horizontal rotation in the opposite direction to the 2d (a, z), and to see how this is achieved from the phase of still before preparing 4p. At the passage from the latter to the taking of the parameters 8p, the parameters of (y, x) are copied directly into (a, z) and knowing that in 4d, two parameters are not linked in the dimension, the links of geometry between respective parameters of the dimensions "x" "y" "z" and "a" of the 4d are directly "forgotten" and used to establish the links by case, then identified in links of color organized by side, the parameter of color of a dimension joining the parameter of the other color of the superimposed dimension, that is to say two links L or two links O between " x " and " z " and two links L or two links O between " y " and " a ".
And we distribute these L or O connections on all the figures in 4d by coloring in passing the right angles which are the only connections of geometry between orthogonal parameters and thus also L or O connections. Without forgetting the forgotten links.

Then one passes from the taking of the 8p parameters to the phase of the complete initial conditions, that is to say a 4d reference frame of the same 3d form as in the incomplete initial conditions, by the rotation of axis "a" in right angle of the 2d (a, z) upwards, and in which there are 4d L or O links between the parameters of "a" and the parameters of "y". And since there is "pivot" orthogonality between these parameters, those of "a" oriented vertically in the 2d (a, z) and those of "y" always oriented horizontally in the 2d (y, x), the pivot right angles between the parameters of "a" and "y" are identified as the only geometry connections between the parameters of the dimensions "a" and "y" in the 4d frame of reference in 3d form.

This allows, in 4d reference frame, to count only the 2d right angle (y, x), the 2d right angle (a, z), two pivotal right angles of color L or O between the parameters of "y" and "a" and two right angles of color L or O between the parameters of "x" and "z".

This leads to a 4-dimensional reference frame with 4 right angles! The 4d L or O links being simple operating links that have been established with respect to the geometry of the dimensions and parameters, the right angles between parameters are reflected in their respective dimensions and the only geometry link between the "a" dimension and the "y" dimension in the 4d reference frame in 3d form is a pivot orthogonality link. And the 4 right angles counted in this reference frame are then the 2d right angle (y, x), the 2d right angle (a, z), the right angle between "x" and "z" and the pivot right angle between "y" and "a". We have:

"x" orthogonal to "y" orthogonal to "a" orthogonal to "z" orthogonal to "x"

And so even if we see that in 4d we are limited by the right angles because we cannot give the orthogonalities between " x " and " a " and between " y " and " z ", we add a dimension orthogonal to the 3 others in a 3d orthogonal frame of reference when we pass from 3d to 4d by using the form of the 4d frame of reference where the positions of the axes can be given by the 3d and knowing that it is only the orthogonality in pivot that counts between " y " and " a " in 4d.
To verify this there are: "x" orthogonal to "a" and "y" orthogonal to "z" in 3d; "x" orthogonal to "y", "x" orthogonal to "z" and "z" orthogonal to "a" in 3d and 4d; and finally we place ourselves in the 4d frame of reference with "a" orthogonal in pivot to "y" and we obtain all the necessary orthogonality.

Finally, this reasoning could continue but it concludes for the moment with the pseudo 3d. The pseudo 3d is the 4d reference frame in 3d form from which we remove the parameters of (a, z), the geometry links being similar to "forgotten links waiting for 4d color", and where the dimension "a" is hidden to simulate the starting 3d and its proximity to the 4d.
Being less incomplete than the assumed 3d, the pseudo 3d allows us to confirm that the parameters of (a, z) PO1 MO1 PL2 and ML2 are the parameters that add to the parameters of "x" and "y" in 4 dimensions. And do these parameters come from a second pseudo 3d?

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PASSAGE EN 4d CHAMP DE LUMIERE ET D'OMBRE

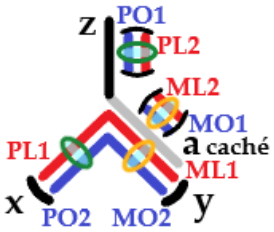
Couleurs de paramètres : L et O | L : élément de l'espace plan
O : autre élément de l'espace plan

Paramètre math	Paramètre physique
PL	Propa Lumière
ML	Mouvement Lumière
PO	Propa Ombre
MO	Mouvement Ombre

Liaison oubliée en attente de couleur 4d

Dimensions : x, y, z, a
Liaison d'origine
Liaison oubliée
Liaison 4d L ou O
Liaison 4d L ou O

11 Pseudo 3d

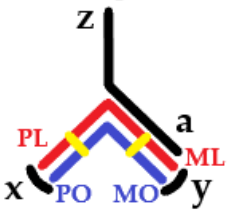


10 Passage à la pseudo 3d

Non 4d

1 3d supposée

2 Conditions initiales incomplètes

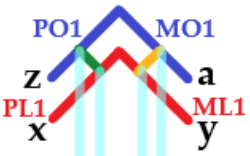


3 Préparation à la prise des paramètres

4d

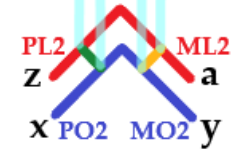
4 Prise des paramètres 4p

Cas 1

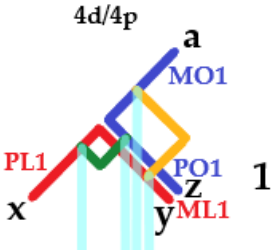


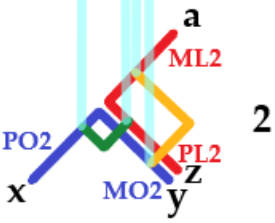
ou

Cas 2

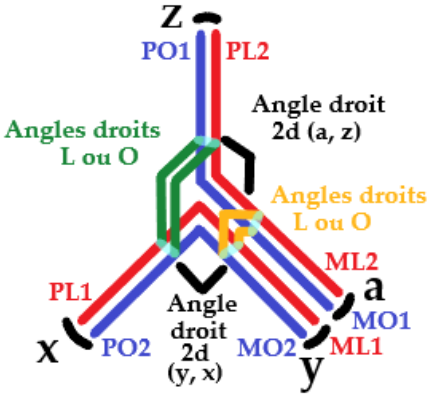


5 Repère horizontal 4d/4p

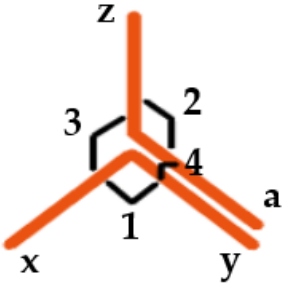




8 Conditions initiales complètes
Repère 4d en forme 3d



9 Repère 4d forme 3d avec dimensions



4d à 4 angles droits

7 Prise des paramètres 8p
Etablissement des liaisons L ou O 4d

Fusion

6 Repère horizontal 4d/8p