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The rope of Time

A sign convention
between Real and Imaginary,
Extension and Thought

Pulsano (TA), lì 12/04/2018

An analytical review of relativistic kinematism
and the quantum meaning of information.

INDEX

INDICE

Pulsano (TA), li’ 12 aprile 2018

THE ROUND OF TIME

If you wonder what day it is today,
you do not know what day it was yesterday
and what day will be tomorrow.
Every time you ask, you lose your balance.
When you stop asking, the show will be over.

It is a logical duty to adapt the representation to the model of representation and not the other way round. If the choice of the measuring meter with which to measure the geometric extension of the physical world is that of a rigid element, so the measurement result with that meter will have to respect the rigidity of the instrument. We could implement new measurement methods and different calculation algorithms, so we will refine the limits of the observation, but the rule of the cognitive procedure must be the same: adapt the representation to the instrument and not manipulate the initial postulate assigned according to the result of the measure . If we consider it opportune, or convenient, to do the opposite, we would incur the error of never having a reliable parameter and measurement model with which to correctly interpret the results of experience.
We will demonstrate in these brief notes that relativistic kinematics, the result of having assigned postulate value to a principle, that of velocity of information in the vacuum and quantum mechanics, born instead from the experimental evidence of the discretization of the quantum of energy in the study of elementary particles, both are already written forms of the geometric postulate and of the algebra with which we have decided to treat the same geometric postulate.
In writing this thesis no further hypotheses and postulates were raised.
We have deduced from the postulated Euclidean geometric space and from the elementary development of algebra.
We will conclude with a model where the geometrical space will preserve the postulate geometric characteristics, we will also highlight the discernment between what we mean by space interval and how much we really assign

time to cover it.
Although not the purpose, but only a natural consequence, we will analytically express the Cartesio deductive and philosophical system.
But we have finally pointed out, further, that what we deduced, correct form of representation, nothing can 'calculate and then add to what in nature, in its constancy remains a value of information finally freely fixed.
That free will, which we will have unveiled in the equations, will be the one with which, we will conclude and by virtue of which we will not demonstrate, stating that "**the horizon of knowledge is not a physical limit, but the limit we will have assigned to our intellectual abilities , of thought, doubt and above all human need to ask further".**

INTRODUCTION

A distance measurement between two geometric points is independent of the time interval used to travel this distance.
This is the geometric place we choose to represent the physical world.
Whatever the result of our deductions, starting from the beginning or the postulate we intend to adopt.
The "represented" can not and must not modify the "form of representation": the piece of paper on which we choose to draw will keep the mutual distance between its squares unchanged regardless of the speed with which we trace the furrow with the pencil, in how much time is not contemplated in postulated geometry.
If in the treatment of the physical world we should instead resort to the art of modifying this premise, while contemplating the obtained measurement results, introducing a non-geometric axis (fourth vector) into geometric space, we will not have made mistakes, but we have arbitrarily omitted something , because we will not have any questions asked "upstream of the postulate" and we will not have got any further answers.

CALCULATION OF STRENGTH COMPONENTS IN TRAJECTORY

By definition, the Force vector is equal to the derivative with respect to the time of the vector $\vec{P} = m * \vec{V}$. The following expression demonstrates that the Force acting on a mass material point m traveling a generic trajectory at velocity $\vec{V}$, consists of two terms, one tangent and one perpendicular to the trajectory: the tangent component of this vector $\vec{F}$ is equal in module to the derivative with respect to the time of the scalar product $m * v$.

$$\vec{F} = \frac{d(m*\vec{V})}{dt} = \frac{dm}{dt} * \vec{V} + m * \frac{d\vec{V}}{dt} = \frac{dm}{dt} * v * \overrightarrow{U_t} + m * \vec{a} =$$

$$= \frac{dm}{dt} * v * \overrightarrow{U_t} + m * \left(\frac{dv}{dt} * \overrightarrow{U_t} - \frac{m*v^2}{\rho}\overrightarrow{U_n}\right) = \left(\frac{dm}{dt} * v + m * \frac{dv}{dt}\right) * \overrightarrow{U_t} - \frac{m*v^2}{\rho}\overrightarrow{U_n} = \left[\frac{d}{dt}(m * v)\right] * \overrightarrow{U_t} - \frac{m*v^2}{\rho} * \overrightarrow{U_n}$$

The components of force:

$$\frac{d}{dt}(m * v) * \overrightarrow{U_t}$$

$$-\frac{m * v^2}{\rho} * \overrightarrow{U_n}$$

ENERGY DIFFERENTIAL

Developing the scalar product $\left[\frac{d}{dt}(m*v)\right]*\overrightarrow{U_t}*\overrightarrow{ds}=\frac{d}{dt}(m*v)*ds$

$(-\frac{m*v^2}{\rho}*\overrightarrow{U_n}*\overrightarrow{ds}=0 \text{ as orthogonal})$

and solving for $dv=0\Rightarrow v=c$, he gets it:

$dE=\vec{F}*\overrightarrow{ds}=\frac{d(m*v)}{dt}*ds=dm*v^2+m*\frac{dv}{dt}*ds=dm*v^2+m*v*dv\xRightarrow[dv=0\Rightarrow v=c]{}$

$\Rightarrow dE=dm*v^2+m*v*dv=dm*c^2\Rightarrow dm*(c^2-v^2)=m*v*dv\Rightarrow$

$\Rightarrow\frac{dm}{m}=\frac{v*dv}{c^2-v^2}\Rightarrow\int\frac{dm}{m}=\int\frac{v*dv}{c^2-v^2}\Rightarrow\ln m=-\frac{1}{2}*\ln(c^2-v^2)+k\xRightarrow[v=0\Rightarrow m=m_0]{}$

$\xRightarrow[v=0\Rightarrow m=m_0]{}\ln m_0=-\frac{1}{2}*\ln c^2+k\Rightarrow k=\ln m_0*c\Rightarrow\ln m=\ln\frac{1}{\sqrt{c^2-v^2}}+\ln m_0*c\Rightarrow$

$\Rightarrow\ln m=\ln\frac{m_0*c}{\sqrt{c^2-v^2}}\xRightarrow[e^{\ln m}]{}m=\frac{m_0*c}{\sqrt{c^2-v^2}}\Rightarrow m=\frac{m_0*c}{c*\sqrt{1-v^2/c^2}}\Rightarrow m=\frac{m_0}{\sqrt{1-\frac{v^2}{c^2}}}$

it follows:

The general expression of the Energy differential:

$dE=dm*v^2+m*v*dv$

The previous equation resolved with boundary condition $(\xRightarrow[\text{For } v=0\Rightarrow m=m_0]{})$

$$m=\frac{m_0}{\sqrt{1-\frac{v^2}{c^2}}}$$

where the constant term "c" is any constant speed module value (assigned generically for dv = 0).

We will demonstrate that this numerical value physically corresponds to the velocity form of "information" in the strict sense of the term.

It should also be noted that this expression is reached by a geometric definition of motion and by the definition of force, by not introducing any further physical postulate.

The previous expression can be written:

$m=\frac{m_0}{\sqrt{1-\frac{v^2}{c^2}}}\Rightarrow m^2=\frac{{m_0}^2}{1-\frac{v^2}{c^2}}\Rightarrow m^2=\frac{{m_0}^2*c^2}{c^2-v^2}\Rightarrow m^2*c^2-m^2*v^2={m_0}^2*c^2\Rightarrow c^2=v^2+\frac{{m_0}^2}{m^2}$

$$c^2=v^2+\frac{{m_0}^2}{m^2}\Rightarrow$$

$\Rightarrow c^2-v^2=\frac{{m_0}^2}{m^2}$

THE SPEED CONSTANT VALUE

We are looking for a vector $\vec{V}$ acceleration nothing:

$$\frac{d\vec{V}}{dt} = \left(\frac{dv}{dt}\right) * \overrightarrow{U_t} - \left(\frac{v^2}{\rho}\right) * \overrightarrow{U_n}$$

$$\left|\frac{d\vec{V}}{dt}\right| = 0 \Rightarrow \sqrt{\left(\frac{dv}{dt}\right)^2 + \left(\frac{v^2}{\rho}\right)^2} = 0 \Rightarrow \left(\frac{dv}{dt}\right)^2 = -\left(\frac{v^2}{\rho}\right)^2 \Rightarrow$$

$$\frac{dv}{dt} = \frac{v^2 * i}{\rho} \underset{\rho=\frac{ds}{d\propto}}{\Longrightarrow} \frac{dv}{dt} = \frac{v^2 * i}{ds} * d\propto \Rightarrow \frac{dv}{dt} * ds = v^2 * i * d\propto \Rightarrow$$

$$\underset{v\neq 0}{\Longrightarrow} dv * \cancel{v} = v^{\cancel{2}} * i * d\propto \Rightarrow dv = v * i * d\propto \Rightarrow \frac{dv}{v} = i * d\propto \Rightarrow$$

$$\Rightarrow \int \frac{dv}{v} = \int i * d\propto \Rightarrow \ln v = i * \propto + k \Rightarrow v = e^{i*a+k} = e^k * e^{i*a} \Rightarrow$$

Module constant:

$$\Rightarrow \mathbf{v} = \mathbf{c} * \mathbf{e}^{\mathbf{i}*\propto} = \mathbf{c} * (\mathbf{cos} \propto + \mathbf{i} * \mathbf{sin} \propto)$$

$$dv = -c * (\sin \propto - i * \cos \propto) * d\propto$$

$$dv = v^2 * i * d\alpha$$

We deduce the expression of a velocity module coinciding with the generic expression of a constant in the complex plane, where the anomaly ∝ is equal to the progressive rotation angle around the center of instantaneous rotation.

A constant velocity vector is therefore that, in general, of a point which maintains towards constant ($d\alpha = 0$), and consequently a constant form ($c * e^{i*a}$).

It should be noted that having imposed the null acceleration of the geometric point means having given definition of the immutability over time of the distances between the points, the geometric space that we use to represent the physical event, translates with constant speed in form and towards maintaining the distance between the points belonging to it is rigidly constant.

The complex solution of speed thus obtained shows that a generic complex numerical constant, of anomaly ∝, coinciding with the progressive rotation angle around a center of instantaneous rotation, translates the physical geometry of a system, independently of the observer's speed that it measures. The constant value c, also coincides with the maximum value of real velocity that a point represented in the same geometric space can assume for multiple integers of 2п.

DEDUCTIONS

We are looking for a real expression of the velocity value and consequently we calculate the imaginary component of the complex value. This passage, though superfluous, allows us to translate the passages to which we refer to the remarkable expressions.

If in the expression $\mathbf{v = c * e^{i*\propto}}$ we impose a real reading of the value of v:

$$v = c * \cos \propto$$

$v = c * \cos \propto \Rightarrow \frac{dm}{m} = \frac{v*dv}{c^2-v^2} = \frac{c*\cos\propto*(-c*\text{sen}\propto)*d\propto}{c^2*(1-(\cos\propto)^2)} =$

$\overline{\overline{\text{sen} \propto \neq 0}} \frac{-\cos\propto*d\propto}{\text{sen}\propto} \Rightarrow \frac{dm}{m} = \frac{-\cos\propto*d\propto}{\text{sen}\propto} \Rightarrow \int \frac{dm}{m} = \int \frac{-\cos\propto*d\propto}{\text{sen}\propto} \Rightarrow \ln m = -\ln \text{sen} \propto +k \Rightarrow$

$\ln m = \ln \frac{1}{\text{sen}\propto} + k \xRightarrow[\text{Def.v=0 m=}m_0\ (\cos\propto=0\Rightarrow\propto=\frac{\Pi}{2}+2*n*\Pi)]{} \ln m_0 = \ln 1 + k \xRightarrow[v=0\ m=m_0]{} \ln m = \ln \frac{m_0}{\text{sen}\propto}$

$\ln m = \ln \frac{1}{\text{sen}\propto} + k \xRightarrow[\text{Def.v=0 m=}m_0\ (\cos\propto=0\Rightarrow\propto=-\frac{\Pi}{2}+2*n*\Pi)]{} \ln m_0 = \ln(-1) + k \xRightarrow[v=0\ m=m_0]{} \ln m_0 =$

lnei∗Π+k=i∗Π+kk=lnm0−i∗Πlnm=−lnsen∝+lnm0−i∗Π

$\ln \frac{m*\text{sen}\propto}{m_0} = -i * \Pi \Rightarrow \frac{m*\text{sen}\propto}{m_0} = e^{-i*\Pi} = -1$

$\text{sen} \propto = \pm \frac{m_0}{m}$ per $\propto \neq n * \Pi$

$\cos \propto = \frac{v}{c}$

$\cos \propto +i * \text{sen} \propto = e^{i*\propto} \Rightarrow \frac{v}{c} \pm i * \frac{m_0}{m} = e^{i*\propto} \Rightarrow v \pm i * \frac{m_0*c}{m} = c * e^{i*\propto}$

$\Rightarrow \mathbf{v = c * e^{i*\propto} \mp i * \frac{m_0*c}{m} = c * e^{i*\propto} \mp c * i * sen \propto}$

As we have hired

$$v = c * \cos \propto$$

$\Rightarrow c * \cos \propto = c * e^{i*\propto} \mp c * i * \text{sen} \propto \Rightarrow$

$v = c * \cos \propto \Rightarrow c * \cos \propto = c * e^{i*\propto} \mp c * i * \text{sen} \propto \Rightarrow$

$$\Rightarrow \text{sen} \propto = \frac{m_0}{m} \Rightarrow (\text{sen} \propto)^2 = \frac{{m_0}^2}{m^2} \Rightarrow \text{sen} \propto * m^2 = \frac{{m_0}^2}{\text{sen} \propto}$$

Possible boundary conditions:

$\xRightarrow[\mathbf{t=0\ s=0}]{}$

$s = c * e^{i\propto} * t = c * \cos \propto * t + c * i * \text{sen} \propto * t$

$\frac{ds}{dt} = -c * \text{sen} \propto * t * \frac{d\propto}{dt} + c * \cos \propto + c * i * \cos \propto * t * \frac{d\propto}{dt} + c * i * \text{sen} \propto =$

$= i * t * (c * \cos \propto + i * \text{sen} \propto) * \frac{d \propto}{dt} + c * \cos \propto + c * i * \text{sen} \propto =$

$$= i*t*c*e^{i\propto}*\frac{d\propto}{dt}+c*e^{i\propto}=c*e^{i\propto}*\left(\frac{i*t}{dt}*d\propto+1\right)$$

$$\Rightarrow c*e^{i*\propto}=v-i*\frac{m_0*c}{m}=v-i*t*c*e^{i\propto}*\frac{d\propto}{dt}$$

$$i*t*c*e^{i\propto}*\frac{d\propto}{dt}=i*\frac{m_0*c}{m}\underset{*i}{\Rightarrow}t*c*e^{i\propto}*\frac{d\propto}{dt}=\frac{m_0*c}{m}\Rightarrow$$

$$t*e^{i\propto}*\frac{d\propto}{dt}=\frac{m_0}{m}=\operatorname{sen}\propto\Rightarrow$$

$$\Rightarrow\frac{dt}{t}=\frac{e^{i\propto}*d\propto}{\operatorname{sen}\propto}\Rightarrow\int\frac{dt}{t}=\int\frac{e^{i\propto}*d\propto}{\operatorname{sen}\propto}\Rightarrow\ln t=\ln(1-e^{2i\propto})+k\Rightarrow$$

$$t=e^{k_1}*\left(1-e^{2i\propto}\right)=-e^{k_1}*\left(e^{2i\propto}-1\right)\Rightarrow$$

$$\Rightarrow\frac{1}{e^{2i\propto}-1}=-\frac{e^{k_1}}{t}\Rightarrow t=\frac{1-e^{2i\propto}}{e^{k_1}}\Rightarrow dt=\frac{-2*i*e^{2i\propto}}{e^{k_1}}*d\propto$$

$$\frac{dm}{m}=\frac{v*dv}{c^2-v^2}=\frac{c^2*\left(\frac{v*dv}{c^2}\right)}{c^2*\left(1-\frac{v^2}{c^2}\right)}=\frac{c*e^{i\propto}*i*e^{i\propto}*d\propto}{1-e^{2i\propto}}=\frac{e^{2i\propto}*i*d\propto}{1-e^{2i\propto}}\Rightarrow$$

$$\frac{e^{2i\propto}*i*d\propto}{1-e^{2i\propto}}=\frac{dm}{m}\Rightarrow\ln m=-\frac{1}{2}*\ln\left(e^{2i\propto}-1\right)+k\Rightarrow m=\frac{e^{k_2}}{\sqrt{e^{2i\propto}-1}}\Rightarrow$$

$$m^2=\frac{e^{2k_2}}{e^{2i\propto}-1}=-\frac{e^{2k_2}*e^{k_1}}{t}\Rightarrow(m*i)^2=\frac{e^{(2k_2+k_1)}}{t}$$

$$\underset{t=0\ s=i*\rho}{\Longrightarrow}$$

$$s=c*e^{i\propto}*t+i*\rho\Rightarrow v=\frac{ds}{dt}=c*e^{i\propto}+i*\frac{d\rho}{dt}$$

$$v=c*e^{i*\propto}-c*i*\operatorname{sen}\propto$$

$$\Rightarrow i*\frac{d\rho}{dt}=-c*i*\operatorname{sen}\propto$$

$$\frac{ds}{dt}=c*\ \cos\propto\Rightarrow i*\frac{d\rho}{ds}=-i*\tan\propto\Rightarrow\frac{d\rho}{\rho*d\propto}=-\tan\propto\Rightarrow\frac{d\rho}{\rho}=-\tan\propto d\propto\Rightarrow$$

$$\Rightarrow\ln\rho=-\ln|\cos\propto|+k=\ln\frac{1}{\cos\propto}+\ln e^k\Rightarrow\ln\frac{\rho}{e^k}=\ln\frac{1}{\cos\propto}\Rightarrow\frac{\rho}{e^k}=\frac{1}{|\cos\propto|}\Rightarrow$$

$$\Rightarrow\frac{ds}{d\propto}=e^k*\frac{1}{|\cos\propto|}\Rightarrow ds=e^k*\frac{d\propto}{|\cos\propto|}\Rightarrow s=e^k*\ln(\tan\propto+\frac{1}{\cos\propto})=e^k*\ln(\frac{d\rho}{ds}+\frac{\rho}{e^k})=$$

$$\frac{ds}{dt}=c*\ \cos\propto$$

$$\frac{d\rho}{dt}=-c*i*\operatorname{sen}\propto$$

$$\frac{\frac{d\rho}{dt}}{\frac{ds}{dt}}=\frac{-c*i*\operatorname{sen}\propto}{c*\ \cos\propto}=\frac{d\rho}{ds}=-i*\tan\propto$$

$$\left(\frac{ds}{dt}\right)^2+\left(\frac{d\rho}{dt}\right)^2=c^2\Rightarrow(ds)^2+(d\rho)^2=(c*dt)^2$$

$$dt=\frac{-2*i*e^{2i\propto}}{e^{k_1}}*d\propto\Rightarrow(dt)^2=\frac{-4*e^{4i\propto}}{e^{2*k_1}}\Rightarrow(ds)^2+(d\rho)^2=-4*c^2*\frac{e^{4i\propto}}{e^{2*k_1}}(d\propto)^2$$

REMARKABLE EXPRESSIONS

$\frac{v}{c} = e^{i*a} = \cos \propto + i * \sin \propto$

$\frac{c}{v} = e^{-i*a} = \cos \propto - i * \sin \propto$

$\frac{v}{c} - \frac{c}{v} = \cos \propto + i * \sin \propto - (\cos \propto - i * \sin \propto) = 2 * i * \sin \propto$

$v^2 - c^2 = 2 * c * v * i * \sin \propto \Rightarrow i * \sin \propto = \frac{v^2 - c^2}{2cv}$

$\frac{v}{c} + \frac{c}{v} = \cos \propto + i * \sin \propto + (\cos \propto - i * \sin \propto) = 2 * \cos \propto$

$v^2 + c^2 = 2 * v * c * \cos \propto \Rightarrow \cos \propto = \frac{c^2 + v^2}{2cv}$

$v = c * e^{i*\propto} = c * (\cos \propto + i * \sin \propto) \Rightarrow$

$$\mathbf{v = c * \left[\frac{v^2 + c^2}{2cv} + \frac{v^2 - c^2}{2cv}\right]}$$

Ove

$\frac{\mathbf{v^2 - c^2}}{\mathbf{2cv}} = \mathbf{i * \sin} \propto$

$\frac{\mathbf{v^2 + c^2}}{\mathbf{2cv}} = \mathbf{\cos} \propto$

$\frac{v^2 - c^2}{v^2 + c^2} = i * \tan \propto$

$v = 0 \text{ per } \propto = \text{arctang}(i)$

$v = c \text{ per } \propto = n * \Pi$

(Conditions of boundary which can be reached analytically even canonical).

Further:

$\frac{(c^2 + v^2)^2}{4c^2v^2} = (\cos \propto)^2$

$\frac{(v^2 - c^2)^2}{4c^2v^2} = (i * \sin \propto)^2 = -(\sin \propto)^2$

$\cos 2 \propto = \frac{c^4 + v^4}{2c^2v^2}$

$i * \sin 2 \propto = \frac{v^4 - c^4}{2c^2v^2}$

$$v^2 = c^2 * \left(\frac{v^4 + c^4}{2c^2v^2} + \frac{v^4 - c^4}{2c^2v^2}\right)$$

$$\mathbf{v} = \mathbf{c} * \left[\frac{\mathbf{v^2 + c^2}}{\mathbf{2cv}} + \frac{\mathbf{v^2 - c^2}}{\mathbf{2cv}}\right]$$

In the complex constant, the imaginary unity is no longer indicated.
In the expression $\frac{\mathbf{v}}{\mathbf{c}} = \mathbf{e^{i*a}}$ **at a reading** $+\propto$ **changing the reading direction of the angle, in fact we obtain the reciprocal value** $\frac{\mathbf{c}}{\mathbf{v}} = \mathbf{e^{-i*a}}$, **we will have, in fact, what is meant by space interval and what is meant by time interval is exchanged.**
The correspondence is that of a reading which, while keeping the origin of the observer unchanged, measures its progression externally to the geometric element (the sum of the internal angles equal to п, the external one equal to 2п, of a regular polygon that for infinitesimal elements of the sides degenerates in the circumference).

"What I would measure from the outside with the meter, from the inside I would count the seconds with the clock and vice versa".

The previous suggests to write::

$$\frac{dv}{v} = i * d \propto$$

$$\frac{d\left(\frac{1}{v}\right)}{\frac{1}{v}} = -i * d \propto \Rightarrow d\left(\frac{1}{v}\right) = \frac{-i * d \propto}{v}$$

Remembering that:

$$dv = -\frac{1}{v^2} * d\left(\frac{1}{v}\right) \Rightarrow dv = -\frac{1}{v^2} * \frac{-i * d \propto}{v} \Rightarrow dv = \frac{i * d \propto}{v^3} \Rightarrow v^3 dv = i * d \propto \Rightarrow$$

$$\int v^3 dv = \int i * d \propto \Rightarrow \frac{v^4}{4} = i * \propto + k \xRightarrow[\text{Per } \propto = 2n\pi \; v=c]{} \frac{c^4}{4} = i * 2n\pi + k \Rightarrow k = \frac{c^4}{4} - 2n\pi * i \Rightarrow$$

$$\frac{v^4}{4} - \frac{c^4}{4} = i * \propto - 2n\pi * i \Rightarrow$$

$$\mathbf{v^4 - c^4 = 4 * i} * (\propto \mathbf{-2n\pi})$$

THE COMPLEX CONSTANT

Now remembering the expressions:

$$\frac{v^2-c^2}{2cv} = i * \sin\propto \Rightarrow v^2 - c^2 = 2cv * i\sin\propto$$

$$\frac{v^2+c^2}{2cv} = \cos\propto \Rightarrow v^2 + c^2 = 2cv * i\cos\propto$$

Multiplying and replacing:

$$(v^2 - c^2) * (v^2 + c^2) = 4 * c^2v^2 * i*\sin\propto * \cos\propto \Rightarrow$$

$$4 * i * (\propto - 2n\Pi) = 4 * c^2v^2 * i*\sin\propto * \cos\propto \Rightarrow$$

$$(\propto - 2n\Pi) = c^2v^2 * \sin\propto * \cos\propto = c^2v^2 * \frac{\sin 2\propto}{2} \Rightarrow$$

$$c^2v^2 = \frac{2(\propto - 2n\Pi)}{\sin 2\propto} \Rightarrow$$

$$\mathbf{v^2 = \frac{1}{c^2} * \frac{2(\propto - 2n\pi)}{\sin 2\propto}}$$

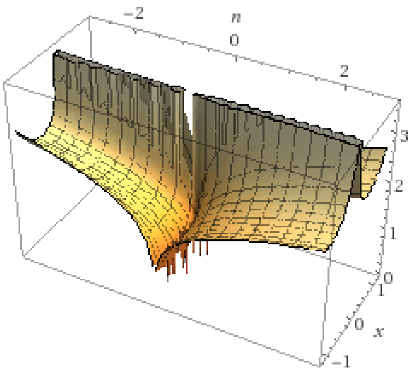
From the same expression:

$$v^4 - c^4 = 4 * i * (\propto - 2n\Pi) \Rightarrow$$

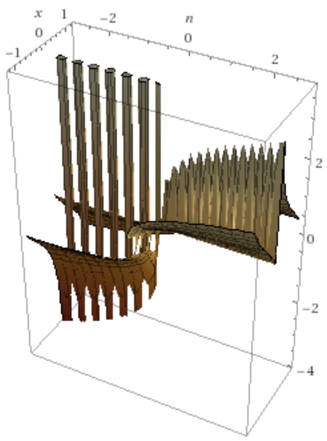
$$c^4 * e^{4i\propto} - c^4 = 4 * i * (\propto - 2n\Pi) \Rightarrow$$

$$c^4 * \left(e^{4i\propto} - 1\right) = 4 * i * (\propto - 2n\Pi) \Rightarrow$$

$$\mathbf{c^4 = \frac{4 * i * (\propto - 2n\pi)}{(e^{4i\propto} - 1)}}$$



Real part of c



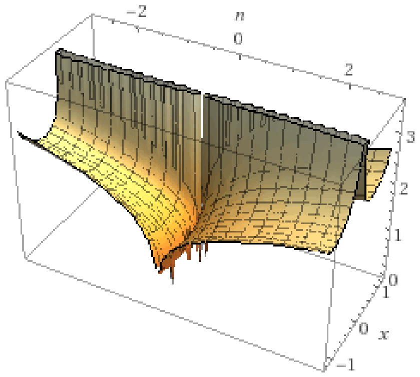
Imaginary part of c

Further:

$v^4 - v^4 * e^{-4i\propto} = 4 * i * (\propto -2n\pi) \Rightarrow$

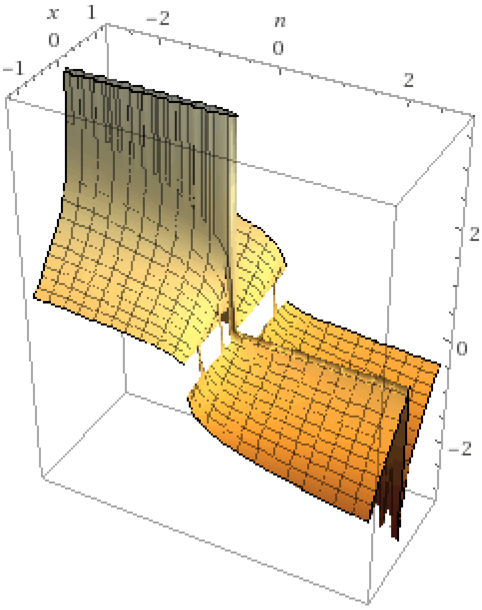
$v^4\left(1 - e^{-4i\propto}\right) = 4 * i * (\propto -2n\pi) \Rightarrow$

$$\mathbf{v^4 = \frac{4 * i * (\propto -2n\pi)}{(1 - e^{-4i\propto})}}$$



Real part of v

The real part ($c * \cos \propto$), remains unchanged, instead changes the sign of the imaginary part ($c * i * \sin \propto$), the choice of sign actually combines the complex value.



Imaginary part of v

$$c^4 * v^4 = \frac{4 * i * (\propto -2n\Pi)}{(e^{4i\propto} - 1)} * \frac{4 * i * (\propto -2n\Pi)}{(1 - e^{-4i\propto})} \Rightarrow$$

$$c^4 * v^4 = -\frac{16*(\propto-2n\pi)^2}{(e^{4i\propto}-1)*(1-e^{-4i\propto})} == -\frac{16*(\propto-2n\Pi)^2}{e^{4i\propto}-1-1+e^{-4i\propto}} = -\frac{16*(\propto-2n\Pi)^2}{e^{4i\propto}-1-1+e^{-4i\propto}} = \frac{-16*(\propto-2n\Pi)^2}{-4*(\sin 2\propto)^2} \Rightarrow$$

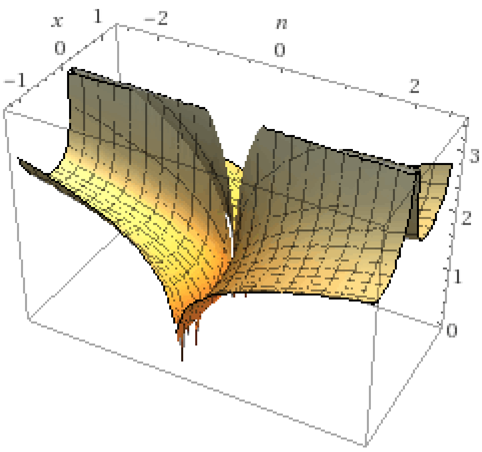
$$c^4 * v^4 = \frac{4 * (\propto -2n\Pi)^2}{(\sin 2 \propto)^2} \Rightarrow c^2 * v^2 = \frac{2 * (\propto -2n\Pi)}{(\sin 2 \propto)}$$

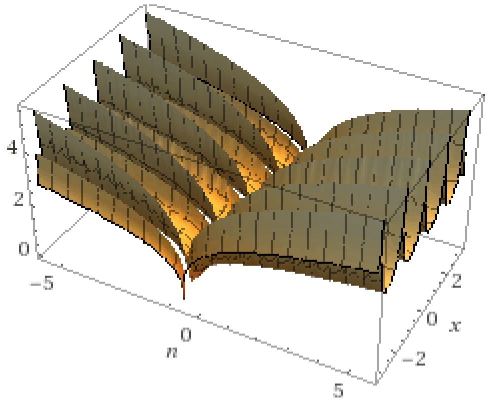
c.v.d.

$$\mathbf{c^2 * v^2} = \frac{\mathbf{2} * (\propto -\mathbf{2n\pi})}{(\mathbf{\sin 2} \propto)}$$

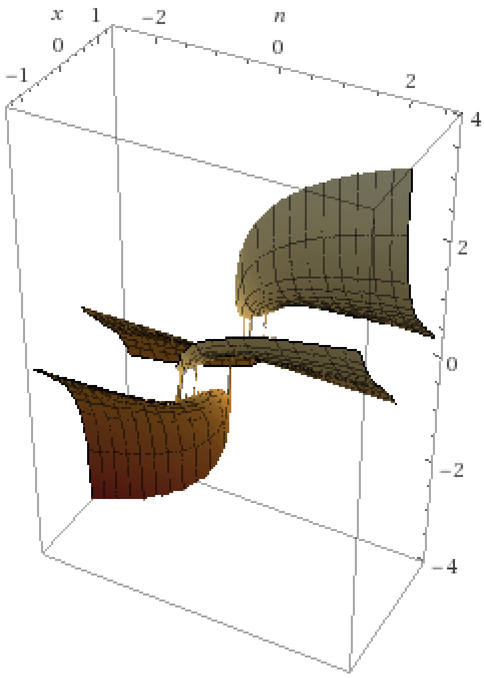
$$c^4 = \frac{2 * (\propto -2n\pi)}{(\sin 2 \propto)} e^{-2i\propto}$$

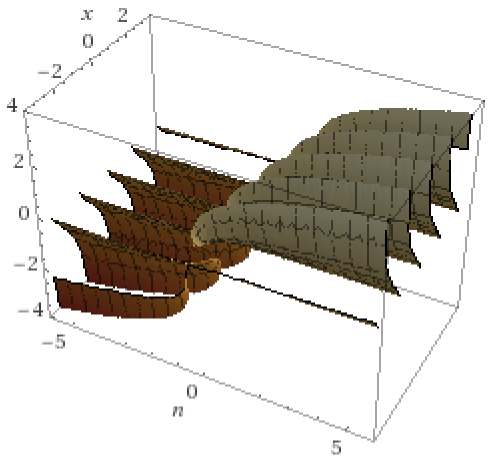
$$c = \sqrt[4]{\frac{2 * (\propto -2n\pi)}{(\sin 2 \propto)} e^{-2i\propto}}$$





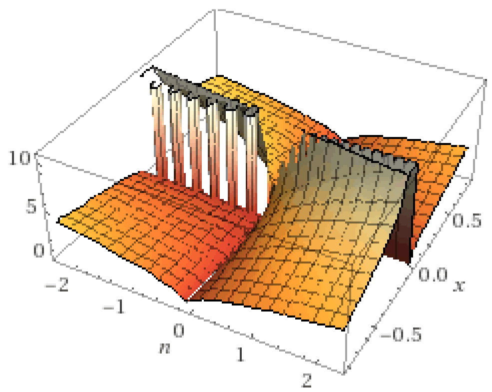
Real part of c



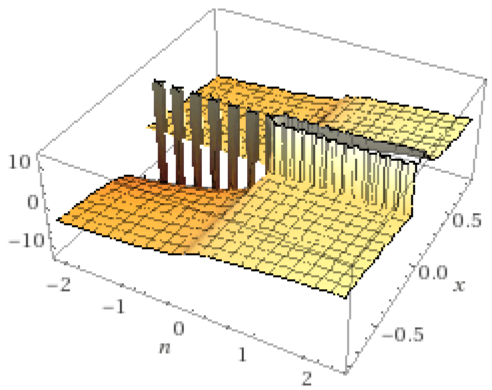


Imaginary part of c

$$c^2 = \sqrt[2]{\frac{2 * (\propto - 2n\pi)}{(\sin 2 \propto)} e^{-2i\propto}}$$



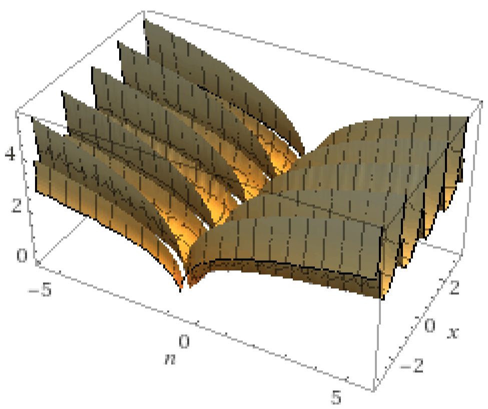
Real part of c^2



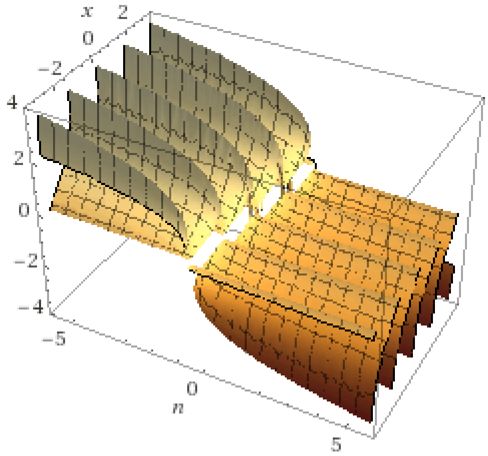
Imaginary part of c^2

$$v^4 = \frac{2 * (\propto - 2n\pi)}{(\sin 2 \propto)} e^{2i\propto}$$

$$v = \sqrt[4]{\frac{2 * (\propto - 2n\pi)}{(\sin 2 \propto)} e^{2i\propto}}$$

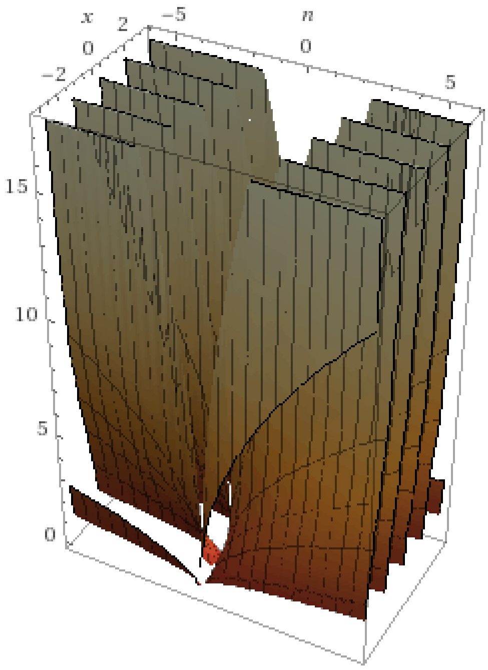


Real part of v

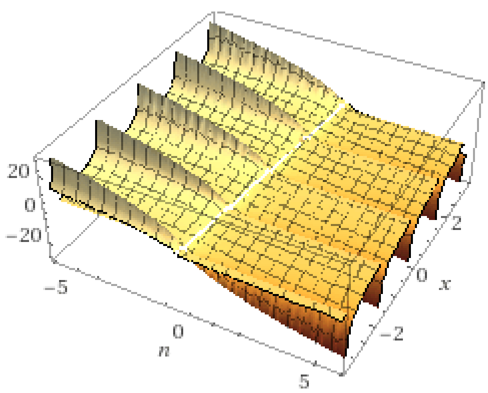


Imaginary part of v

$$v^2 = \sqrt[2]{\frac{2 * (\propto - 2n\pi)}{(\sin 2 \propto)} e^{2i\propto}}$$

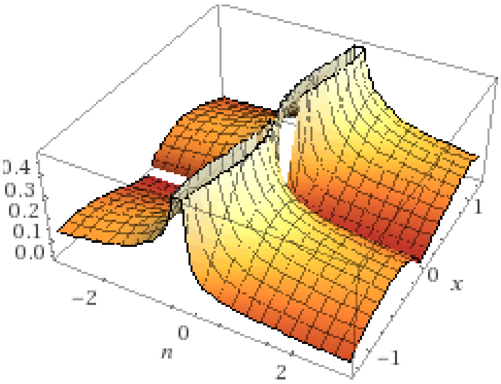


Real part of v^2

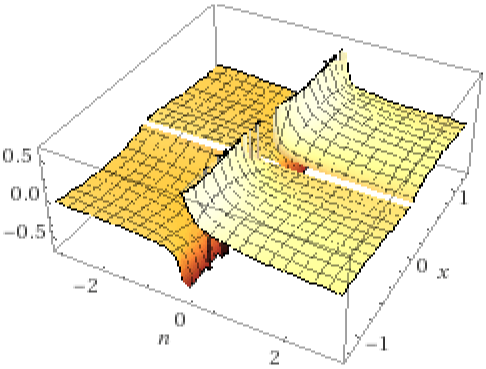


Imaginary part of v^2

$$\frac{1}{v^2}=\left(\frac{2*(\propto-2n\pi)}{(\sin 2\propto)}e^{2i\propto}\right)^{-1}$$



Real part of $\frac{1}{v^2}$



Imaginary part of $\frac{1}{v^2}$

$$v^4+c^4=\frac{2*(\propto-2n\pi)}{(\sin 2\propto)}*\left(e^{-2i\propto}+e^{2i\propto}\right)=\frac{2*(\propto-2n\pi)}{(\sin 2\propto)}*2*\cos 2\propto=\frac{4*(\propto-2n\pi)*\cos 2\propto}{\sin 2\propto}$$

$$v^2=c^2*\left(\frac{v^4+c^4}{2c^2v^2}+\frac{v^4-c^4}{2c^2v^2}\right)=c^2*\left(\frac{4*(\propto-2n\pi)*\cos 2\propto}{\sin 2\propto*2c^2v^2}+\frac{4*i*(\propto-2n\pi)}{2c^2v^2}\right)\Rightarrow$$

$$v^4=2*(\propto-2n\pi)*(\cot 2\propto+i)$$

$$c^2=v^2*\left(\frac{v^4+c^4}{2c^2v^2}-\frac{v^4-c^4}{2c^2v^2}\right)=v^2*\left(\frac{4*(\propto-2n\pi)*\cos 2\propto}{\sin 2\propto*2c^2v^2}-\frac{4*i*(\propto-2n\pi)}{2c^2v^2}\right)\Rightarrow$$

$$c^4=2*(\propto-2n\pi)*(\cot 2\propto-i)$$

$$v^4*c^4=4*(\propto-2n\pi)^2*(\cot 2\propto-i)(\cot 2\propto+i)=4*(\propto-2n\pi)^2*((\cot 2\propto)^2+1)=$$

$$v^4*c^4=4*(\propto-2n\pi)^2*\left(\frac{1}{\sin 2\propto}\right)^2\Rightarrow$$

$$v^2*c^2=2*(\propto-2n\pi)\quad*\left(\frac{1}{\sin 2\propto}\right)\ \text{c.v.d.}$$

$$\frac{v^4}{c^4}=\frac{(\cot 2\propto+i)}{(\cot 2\propto-i)}=\frac{(\cos 2\propto+i*\sin 2\propto)}{(\cos 2\propto-i*\sin 2\propto)}=\frac{e^{2i\propto}}{e^{-2i\propto}}=e^{4i\propto}\ \text{c.v.d.}$$

$$v^4-c^4=\frac{2*(\propto-2n\pi)}{(\sin 2\propto)}*\left(e^{-2i\propto}-e^{2i\propto}\right)=-\frac{4*(\propto-2n\pi)}{(\sin 2\propto)}*i*\text{sen}\,2\propto$$

$$\frac{dm}{m}=\frac{v*dv}{c^2-v^2}\Rightarrow$$

$\int\frac{dm}{m}=\int\frac{v*dv}{c^2-c^2}=\int\frac{v^2*i*d\propto}{-2cv*i\sin\propto}=\int\frac{v*i*d\propto}{-2c*i\sin\propto}=\int\frac{v*d\propto}{-2c*\sin\propto}=\int-\frac{1}{2}\frac{e^{i*\propto}*d\propto}{\sin\propto}\Rightarrow\ln\frac{1}{m^2}=\ln e^k\big(1-$

e2i∝ Per ∝=π2

1m2π2=ek1−e2iπ2=2∗ekek=12∗m2π2−k=ln2∗m2π22m2=1−e2i∝m2π2

Per $\propto=\frac{\pi}{2}\Rightarrow v=c*i$

We can further write:

$-2*\int\frac{dm}{m}=\int\frac{e^{i*\propto}*d\propto}{\sin\propto}=\int\frac{e^{i*\propto}*d\propto}{\sin\propto}=\frac{\cos\propto+i*\sin\propto}{\sin\propto}d\propto=\ln\sin\propto+i*\propto-k_1\xRightarrow[\text{Per }\propto=\frac{\pi}{2}]{}\ln\frac{1}{m^2\left(\frac{\pi}{2}\right)}=i*$

$\frac{\pi}{2}-k_1\Rightarrow k_1=\ln\frac{1}{m^2\left(\frac{\pi}{2}\right)}+i*\frac{\pi}{2}\Rightarrow\frac{1}{\sin\propto*m^2}=i*\propto-\left(\ln\frac{1}{m^2\left(\frac{\pi}{2}\right)}+i*\frac{\pi}{2}\right)\Rightarrow$

$\frac{v^4}{c^4}=\frac{(\cot 2\propto+i)}{(\cot 2\propto-i)}=\frac{d(\ln\sin\propto+i*\propto)}{d(\ln\sin\propto-i*\propto)}=\frac{d(\ln\sin\propto+i*\propto)}{d(\ln\sin\propto-i*\propto)}=\frac{-2*\frac{dm}{m}}{d(\ln\sin\propto-i*\propto)}=\frac{2*\frac{dm}{m}}{d(-\ln\sin\propto+i*\propto)}=\frac{2*\frac{dm}{m}}{d\left(\ln\frac{1}{\sin\propto}+i*\propto\right)}=$

$-\frac{1}{m^2}$

$\frac{v^2-c^2}{2cv}=i*\sin\propto\Rightarrow v^2-c^2=2cv*i*\sin\propto$

$\frac{v^2+c^2}{2cv}=\cos\propto\Rightarrow v^2+c^2=2cv*\cos\propto\Rightarrow v^2=2cv*\cos\propto-c^2$

MASS SCALAR

$$\frac{dm}{m}=\frac{v*dv}{c^2-v^2}\Rightarrow$$

$$\frac{dm}{m}=\frac{v^2*i*d\propto}{c^2-v^2}=\frac{v^2*i*d\propto}{c^2-v^2}=\frac{\left(c^2-2cv*\cos\propto\right)*i*d\propto}{2cv*i*\sin\propto}=\left(\frac{1}{2}\frac{c*d\propto}{v*\sin\propto}-\frac{\cos\propto}{\sin\propto}\right)d\propto=\frac{1}{2}\frac{e^{-i*\propto}*d\propto}{\sin\propto}-\frac{\cos\propto*d\propto}{\sin\propto}=$$

$$\frac{1}{2}\frac{(\cos\propto-i*\sin\propto)*d\propto}{\sin\propto}-\frac{\cos\propto*d\propto}{\sin\propto}=\frac{1}{2}\frac{(\cos\propto)*d\propto}{\sin\propto}-\frac{i*d\propto}{2}-\frac{\cos\propto*d\propto}{\sin\propto}=-\frac{i*d\propto}{2}-\frac{1}{2}\frac{(\cos\propto)*d\propto}{\sin\propto}$$

$$\int -2*\frac{dm}{m}=\int i*d\propto+\frac{(\cos\propto)*d\propto}{\sin\propto}\Rightarrow -2*\ln m=i*\propto+\ln\sin\propto+k\Rightarrow$$

$$\Rightarrow\ i*\propto+k=\ln\frac{1}{m^2*\sin\propto}\Rightarrow\frac{1}{m^2*\sin\propto}=e^{i*(\propto+k)}\Rightarrow m^2=\frac{e^{-i*(\propto+k)}}{\sin\propto}\Rightarrow m=\sqrt[2]{\frac{e^{-i*(\propto+k)}}{\sin\propto}}$$

$$e^{i*\pi}+1=1+i*i=0\Rightarrow$$

The value $\propto=\tan^{-1}(i)$ makes the complex constant null, it is a value of the angle $\propto$ such that::

$$\sin\propto=i$$

$$\cos\propto=1$$

The unit value of the imaginary part equal to the imaginary unit and the unit value of the real part, equal to the real unit.

METAPHYSICS

The complex constant translates analytically the res extensa (geometry, reading of the real) and the res cogitans (imaginary potential) philosophical formulation of Cartesio, a constant value is a complex value where what we measure in the real is the other side of the coin of what we inform (thought): two reciprocal readings, two conventions of positive alpha measure. The two axes, the real and the imaginary, both have physical valence, only the origin of the information would contemplate the wholeness, an arbitrary constant value, but for this observer there would be no discernment between the measured value of geometric extension and thunderstorm.

"At the origin of the information of how much we measure in the mass climb an observer who wants to measure his own steps, it would converge a travel time identically equal to the time to travel them".

Smiling we would add: to travel a path we use a time that is always identically equal to the time taken to travel it, what is the geometric discretization of the space that we wanted to measure and of which to calculate the travel time.

The notion of space and time intervenes only in a model, which is the algebraic one, where it is implied to have two measures, one of whom we intend to be the observing subject and the other of whom we intend to be the object of observation.

This analysis is the Doubt of Cartesio concerning one's waking and sleeping state.

If the observer observes himself in the thought of Descartes, he will never be able to discern between reality and dream.

CONSIDERATIONS

- The faster we walk through the space, the less time we will have available to measure it, vice versa, the faster we travel, the greater the distance we measure traveled.
- As for space and time, analytically they do not intervene in the same extended reading and in fact the space we measure it, the time we count it.
- Two independent postulate variables have a physical value only in the value of their relationship or of the reciprocal relationship, in general physical space presupposes the relationship between the observer and the object of observation, he lives on this relationship.
- The greater the information, the greater the geometric extent of what we are informed. If we were to absurd or postulate, to contemplate the information in its entirety, we would have no more time to geometrically extend the result of the experience.
- The postulated conservative geometric place, remains conservative in the expressions, therefore the distance between two points therein will depend only on the position of the same and not on the path to reach of such position.
- The zero is not the null, but the unitary value measured with opposite sign convention, how much geometrically we could travel the infinite distance between two symmetric values of opposite sign, infinite values of infinite numbering as are the potential number of our observations.
- It is the arbitrary nature of the writer to believe that Maxwell's equations for the electromagnetic field can easily be substituted with analogous expressions where the spatial extension is supported by the electric field and the temporal extension by the magnetic field.
- The very concept of Entropy suggests that to a plastic deformation of the information, it should be counterposed to be a constancy, an invariance, for those who observe a result that does not replicate the same if not able to change sign the measure of sliding, all Act of the measure itself.
- The certainty of the information originates a null content of the same.

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When I was about to write my expressions, the first thought was to believe that I would never have accepted that the squares of the sheet of paper, as I had postulated as a univocal reference to what I traced with the pencil, could be disfigured in any way by my hand and from my own writing.

If this were the case, if I had disfigured the distances, the dimensions, the reference, the squaring, I would not have been able to write more of my contents and above all others.

I sincerely hope that what I have deduced has made it by incurring errors that in the light of more attentive people can be underlined and never correct.

In this way of my life nobody will be able to pray to it even in the absence of a copyright.

Sincerely

Marco De Lorenzo

MARCO DE LORENZO & MARCELLO MARIA MAMBRETTI

La corda del Tempo

Una convenzione di segno tra Reale ed Immaginario, Estensione e Pensiero

Pulsano (TA), lì 12/04/2018

Una rivisitazione analitica del cinematismo relativistico e del significato quantistico dell'informazione.

Pulsano (TA), li’ 12 aprile 2018

LA CORDA DEL TEMPO

Se ti chiedi che giorno è oggi, non sai che che giorno è stato ieri
e che giorno sarà domani.
Ogni volta che te lo chiedi, perdi l’equilibrio.
Quando smetterai di chiedertelo, lo spettacolo sarà finito.

E' dovere logico adeguare la rappresentazione al modello di rappresentazione e non il contrario. Se la scelta del metro di misura col quale voler misurare estensione geometrica del mondo fisico fosse quella di un elemento rigido, a tal guisa il risultato della misurazione con quel metro dovra' rispettare la rigidita' dello strumento. Potremmo implementare nuovi metodi misura e diversi algoritmi di calcolo, ne affiniremo quindi i limiti dell'osservazione, ma la regola del procedimento conoscitivo dovra' essere la medesima: adeguare la rappresentazione allo strumento e non manipolare il postulato iniziale assegnato in funzione del risultato della misura. Se ritenessimo opportuno, ovvero conveniente, fare il contrario, incorreremmo nell'errore di non disporre mai di un parametro e modello di misura attendibile col quale interpretare correttamente i risultati di esperienza. Dimostremo in queste brevi note che la cinematica relativistica, risultato di aver assegnato valore di postulato ad un principio, quello di velocita' dell'informazione nel vuoto e la meccanica quantistica, nata invece dall'evidenza sperimentale della discretizzazione del quanto di energia nello studio delle particelle elementari, sono entrambe forme gia' scritte del postulato geometrico e dell'algebra con cui abbiamo deciso di trattare lo stesso postulato geometrico.
Nello scrivere di questa tesi non si sono sollevate ulteriori ipotesi e postulati. Abbiamo dedotto dal postulato spazio geometrico Euclideo e dallo sviluppo elementare dell'algebra.
Ne concluderemo con un modello ove lo spazio geometrico conservera' le caratteristiche geometriche postulate, ne evidenzieremo altresì il discernimento tra quanto intendiamo per intervallo di spazio e quanto davvero assegniamo di tempo per percorrerlo.

Pur non essendone la finalita', ma solo una naturale conseguenza, esprimeremo analiticamente l'impianto deduttivo e filosofico del Cartesio.
Ma ne avremo infine evidenziato, ulteriormente, che quanto da noi dedotto, corretta forma di rappresentazione, nulla potra' calcolare e quindi aggiungere a quanto in natura, nella sua costanza resta un valore di informazione infine liberamente fissato.
Quel libero arbitrio, che avremo svelato nelle equazioni, sara' quello col quale, concluderemo e in virtù del quale, non dimostreremo, affermando che l'orizzonte della conoscenza non sia un limite fisico, ma il limite che avremo assegnato alle nostre capacita' intellettuali, di pensiero, Dubbio e soprattutto bisogno umano di domandarne ulteriormente.

PREMESSA

Una misura di distanza tra due punti geometrici è indipendente dall'intervallo di tempo impiegato per percorrere tale distanza.
Questo è il luogo geometrico che scegliamo per rappresentare il mondo fisico. Quale sia sia il risultato delle nostre deduzioni, a partire dal principio o dal postulato si intenda adottare.
Il "rappresentato", non può, né deve modificare la "forma di rappresentazione": il pezzo di carta sul quale scegliamo di disegnare manterrà invariata la mutua distanza tra i suoi quadratini indipendentemente dalla velocità con la quale tracciamo il solco con la matita, in quanto il tempo non è contemplato nella geometria postulata.
Se nel trattare del mondo fisico dovessimo ricorrere invece all'arteficio di modificare tale premessa, pur di contemplare i risultati di misura ottenuti, introducendo nello spazio geometrico, un asse non geometrico (quarto vettore), non avremo compiuto errori, ma avremo arbitrariamente tralasciato qualcosa, in quanto non ci saremo posti delle domande "a monte del postulato" e non ne avremo di conseguenza ottenuto le ulteriori risposte.

CALCOLO DELLE COMPONENTI DI FORZA IN TRAIETTORIA

Per definizione, il vettore Forza è pari alla derivata rispetto al tempo del vettore $\vec{P} = m * \vec{V}$. L'espressione a seguire dimostra che la Forza agente su un punto materiale di massa m e che percorra una traiettoria generica alla velocità $\vec{V}$, si compone di due termini, uno tangente e uno perpendicolare alla traiettoria: la componente tangente di tale vettore $\vec{F}$ è pari in modulo alla derivata rispetto al tempo del prodotto scalare $m * v$.

$$\vec{F} = \frac{d(m*\vec{V})}{dt} = \frac{dm}{dt} * \vec{V} + m * \frac{d\vec{V}}{dt} = \frac{dm}{dt} * v * \overrightarrow{U_t} + m * \vec{a} =$$

$$= \frac{dm}{dt} * v * \overrightarrow{U_t} + m * \left(\frac{dv}{dt} * \overrightarrow{U_t} - \frac{m*v^2}{\rho}\overrightarrow{U_n}\right) = \left(\frac{dm}{dt} * v + m * \frac{dv}{dt}\right) * \overrightarrow{U_t} - \frac{m*v^2}{\rho}\overrightarrow{U_n} = \left[\frac{d}{dt}(m * v)\right] * \overrightarrow{U_t} - \frac{m*v^2}{\rho} * \overrightarrow{U_n}$$

Le componenti di forza:

$$\left[\frac{d}{dt}(m * v)\right] * \overrightarrow{U_t}$$

$$-\frac{m * v^2}{\rho} * \overrightarrow{U_n}$$

DIFFERENZIALE DI ENERGIA

Sviluppando il prodotto scalare $\left[\frac{d}{dt}(m*v)\right]*\overrightarrow{U_t}*\overrightarrow{ds}=\frac{d}{dt}(m*v)*ds$

$(-\frac{m*v^2}{\rho}*\overrightarrow{U_n}*\overrightarrow{ds}=0 \text{ in quanto ortogonali})$

e risolvendo $\text{Per } dv=0\Rightarrow v=c$, se ne ottiene:

$dE=\vec{F}*\overrightarrow{ds}=\frac{d(m*v)}{dt}*ds=dm*v^2+m*\frac{dv}{dt}*ds=dm*v^2+m*v*dv\xRightarrow[\text{Per } dv=0\Rightarrow v=c]{}$

$\Rightarrow dE=dm*v^2+m*v*dv=dm*c^2\Rightarrow dm*(c^2-v^2)=m*v*dv\Rightarrow$

$\Rightarrow\frac{dm}{m}=\frac{v*dv}{c^2-v^2}\Rightarrow\int\frac{dm}{m}=\int\frac{v*dv}{c^2-v^2}\Rightarrow\ln m=-\frac{1}{2}*\ln(c^2-v^2)+k\xRightarrow[\text{Per } v=0\Rightarrow m=m_0]{}$

$\xRightarrow[\text{Per } v=0\Rightarrow m=m_0]{}\ln m_0=-\frac{1}{2}*\ln c^2+k\Rightarrow k=\ln m_0*c\Rightarrow\ln m=\ln\frac{1}{\sqrt{c^2-v^2}}+\ln m_0*c\Rightarrow$

$\Rightarrow\ln m=\ln\frac{m_0*c}{\sqrt{c^2-v^2}}\xRightarrow[e^{\ln m}]{}m=\frac{m_0*c}{\sqrt{c^2-v^2}}\Rightarrow m=\frac{m_0*c}{c*\sqrt{1-v^2/c^2}}\Rightarrow m=\frac{m_0}{\sqrt{1-\frac{v^2}{c^2}}}$

Ne deriva:

L’espressione generale del differenziale di Energia:

$$\mathbf{dE=dm*v^2+m*v*dv}$$

La precedente equazione risolta con condizione al contorno ($\xRightarrow[\text{Per } v=0\Rightarrow m=m_0]{}$)

$$\mathbf{m=\frac{m_0}{\sqrt{1-\frac{v^2}{c^2}}}}$$

ove il termine costante “c” è qualsivoglia valore costante di modulo di velocità

(assegnato genericamente per dv=0).

Dimostreremo a seguire che tale valore numerico corrisponde fisicamente al modulo di velocità dell’”informazione” nel senso stretto del termine.

Si noti altresì come a tale espressione si giunga da una definizione geometrica di moto e dalla definizione di forza, non introducendo alcun ulteriore postulato fisico.

L’espressione precedente può essere scritta:

$m=\frac{m_0}{\sqrt{1-\frac{v^2}{c^2}}}\Rightarrow m^2=\frac{m_0{}^2}{1-\frac{v^2}{c^2}}\Rightarrow m^2=\frac{m_0{}^2*c^2}{c^2-v^2}\Rightarrow m^2*c^2-m^2*v^2=m_0{}^2*c^2\Rightarrow c^2=v^2+\frac{m_0{}^2}{m^2}$

$$\mathbf{c^2=v^2+\frac{m_0{}^2}{m^2}}\Rightarrow$$

$\Rightarrow c^2-v^2=\frac{m_0{}^2}{m^2}$

IL VALORE COSTANTE DI VELOCITA'

Ricerchiamo di un vettore $\vec{V}$ di accelerazione nulla:

$$\frac{d\vec{V}}{dt} = \left(\frac{dv}{dt}\right) * \overrightarrow{U_t} - \left(\frac{v^2}{\rho}\right) * \overrightarrow{U_n}$$

$$\left|\frac{d\vec{V}}{dt}\right| = 0 \Rightarrow \sqrt{\left(\frac{dv}{dt}\right)^2 + \left(\frac{v^2}{\rho}\right)^2} = 0 \Rightarrow \left(\frac{dv}{dt}\right)^2 = -\left(\frac{v^2}{\rho}\right)^2 \Rightarrow$$

$$\frac{dv}{dt} = \frac{v^2 * i}{\rho} \underset{\rho=\frac{ds}{d\propto}}{\Longrightarrow} \frac{dv}{dt} = \frac{v^2 * i}{ds} * d \propto \Rightarrow \frac{dv}{dt} * ds = v^2 * i * d \propto \Rightarrow$$

$$\underset{v \neq 0}{\Longrightarrow} dv * \cancel{v} = v^2 * i * d \propto \Rightarrow dv = v * i * d \propto \Rightarrow \frac{dv}{v} = i * d \propto \Rightarrow$$

$$\Rightarrow \int \frac{dv}{v} = \int i * d \propto \Rightarrow \ln v = i * \propto + k \Rightarrow v = e^{i*a+k} = e^k * e^{i*a} \Rightarrow$$

Costante del modulo:

$$\Rightarrow \mathbf{v} = \mathbf{c} * \mathbf{e}^{\mathbf{i}*\propto} = \mathbf{c} * (\mathbf{cos} \propto + \mathbf{i} * \mathbf{sin} \propto)$$

$$dv = -c * (\sin \propto - i * \cos \propto) * d \propto$$

$$dv = v^2 * i * d\alpha$$

Ne deduciamo l'espressione di un modulo di velocità coincidente con l'espressione generica di una costante nel piano complesso, ove l'anomalia ∝ è pari all'angolo progressivo di rotazione attorno al centro di istantanea rotazione.

Un vettore velocità costante è pertanto quella, in generale, di un punto che mantenga verso costante ($d\alpha = 0$), e conseguentemente modulo costante ($c * e^{i*a}$).

Si noti che l'aver imposto l'accelerazione nulla del punto geometrico significa averne dato definizione dell'immutabilità nel tempo delle distanze tra i punti, lo spazio geometrico che utilizziamo per rappresentare l'evento fisico, trasla con velocità costante in modulo e verso mantenendo rigidamente costante la distanza tra i punti che vi appartengono.

La soluzione complessa di velocità così ottenuta dimostra che una generica costante numerica complessa, di anomalia ∝, coincidente con l'angolo progressivo di rotazione attorno ad un centro di istantanea rotazione, traduce la geometria fisica di un sistema, indipendentemente dalla velocità dell'osservatore che ne misura.

Il valore costante c, coincide inoltre col valore massimo di velocità reale che un punto rappresentato nello stesso spazio geometrico possa assumere per multipli interi del 2π.

DEDUZIONI

Ricerchiamo di una espressione reale del valore di velocità e conseguentemente calcoliamo la componente immaginaria del valore complesso. Tale passaggio, pur superfluo, permette di tradurre i passaggi a cui rimandiamo alle Espressioni notevoli.

Se nell'espressione $\mathbf{v = c * e^{i*\propto}}$ imponiamo una lettura reale del valore di v:

$$v = c * \cos \propto$$

$$v = c * \cos \propto \Rightarrow \frac{dm}{m} = \frac{v*dv}{c^2 - v^2} = \frac{c*\cos\propto*(-c*\mathrm{sen}\propto)*d\propto}{c^2*(1-(\cos\propto)^2)} =$$

$$\overline{\overline{\mathrm{sen} \propto \neq 0}} \frac{-\cos\propto*d\propto}{\mathrm{sen}\propto} \Rightarrow \frac{dm}{m} = \frac{-\cos\propto*d\propto}{\mathrm{sen}\propto} \Rightarrow \int \frac{dm}{m} = \int \frac{-\cos\propto*d\propto}{\mathrm{sen}\propto} \Rightarrow \ln m = -\ln \mathrm{sen} \propto + k \Rightarrow$$

$$\ln m = \ln \frac{1}{\mathrm{sen}\propto} + k \xRightarrow[\text{Def.}v=0\ m=m_0\ (\cos\propto=0 \Rightarrow \propto=\frac{\Pi}{2}+2*n*\Pi)]{} \ln m_0 = \ln 1 + k \xRightarrow[v=0\ m=m_0]{} \ln m = \ln \frac{m_0}{\mathrm{sen}\propto}$$

$$\ln m = \ln \frac{1}{\mathrm{sen}\propto} + k \xRightarrow[\text{Def.}v=0\ m=m_0\ (\cos\propto=0 \Rightarrow \propto=-\frac{\Pi}{2}+2*n*\Pi)]{} \ln m_0 = \ln(-1) + k \xRightarrow[v=0\ m=m_0]{} \ln m_0 =$$

lnei∗Π+k=i∗Π+kk=lnm0−i∗Πlnm=−lnsen∝+lnm0−i∗Π

$$\ln \frac{m*\mathrm{sen}\propto}{m_0} = -i * \Pi \Rightarrow \frac{m*\mathrm{sen}\propto}{m_0} = e^{-i*\Pi} = -1$$

$\mathrm{sen} \propto = \pm \frac{m_0}{m}$ per $\propto \neq n * \Pi$

$$\cos \propto = \frac{v}{c}$$

$$\cos \propto + i * \mathrm{sen} \propto = e^{i*\propto} \Rightarrow \frac{v}{c} \pm i * \frac{m_0}{m} = e^{i*\propto} \Rightarrow v \pm i * \frac{m_0*c}{m} = c * e^{i*\propto}$$

$$\Rightarrow \mathbf{v = c * e^{i*\propto} \mp i * \frac{m_0*c}{m} = c * e^{i*\propto} \mp c * i * sen \propto}$$

Poichè abbiamo assunto

$$v = c * \cos \propto$$

$$\Rightarrow c * \cos \propto = c * e^{i*\propto} \mp c * i * \mathrm{sen} \propto \Rightarrow$$

$$v = c * \cos \propto \Rightarrow c * \cos \propto = c * e^{i*\propto} \mp c * i * \mathrm{sen} \propto \Rightarrow$$

$$\Rightarrow \mathrm{sen} \propto = \frac{m_0}{m} \Rightarrow (\mathrm{sen} \propto)^2 = \frac{{m_0}^2}{m^2} \Rightarrow \mathrm{sen} \propto * m^2 = \frac{{m_0}^2}{\mathrm{sen} \propto}$$

Possibili condizioni al contorno

$$\xRightarrow[\mathbf{Per\ t=0\ s=0}]{}$$

$$s = c * e^{i\propto} * t = c * \cos \propto * t + c * i * \mathrm{sen} \propto * t$$

$$\frac{ds}{dt} = -c * \mathrm{sen} \propto * t * \frac{d\propto}{dt} + c * \cos \propto + c * i * \cos \propto * t * \frac{d\propto}{dt} + c * i * \mathrm{sen} \propto =$$

$$= i * t * (c * \cos\propto + i * \text{sen}\propto) * \frac{d\propto}{dt} + c * \cos\propto + c * i * \text{sen}\propto =$$

$$= i * t * c * e^{i\propto} * \frac{d\propto}{dt} + c * e^{i\propto} = c * e^{i\propto} * \left(\frac{i*t}{dt} * d\propto + 1\right)$$

$$\Rightarrow c * e^{i*\propto} = v - i * \frac{m_0 * c}{m} = v - i * t * c * e^{i\propto} * \frac{d\propto}{dt}$$

$$i * t * c * e^{i\propto} * \frac{d\propto}{dt} = i * \frac{m_0 * c}{m} \underset{*i}{\Rightarrow} t * c * e^{i\propto} * \frac{d\propto}{dt} = \frac{m_0 * c}{m} \Rightarrow$$

$$t * e^{i\propto} * \frac{d\propto}{dt} = \frac{m_0}{m} = \text{sen}\propto \Rightarrow$$

$$\Rightarrow \frac{dt}{t} = \frac{e^{i\propto} * d\propto}{\text{sen}\propto} \Rightarrow \int \frac{dt}{t} = \int \frac{e^{i\propto} * d\propto}{\text{sen}\propto} \Rightarrow \ln t = \ln(1 - e^{2i\propto}) + k \Rightarrow$$

$$t = e^{k_1} * \left(1 - e^{2i\propto}\right) = -e^{k_1} * \left(e^{2i\propto} - 1\right) \Rightarrow$$

$$\Rightarrow \frac{1}{e^{2i\propto} - 1} = -\frac{e^{k_1}}{t} \Rightarrow t = \frac{1 - e^{2i\propto}}{e^{k_1}} \Rightarrow dt = \frac{-2 * i * e^{2i\propto}}{e^{k_1}} * d\propto$$

$$\frac{dm}{m} = \frac{v * dv}{c^2 - v^2} = \frac{c^2 * \left(\frac{v * dv}{c^2}\right)}{c^2 * \left(1 - \frac{v^2}{c^2}\right)} = \frac{c * e^{i\propto} * i * e^{i\propto} * d\propto}{1 - e^{2i\propto}} = \frac{e^{2i\propto} * i * d\propto}{1 - e^{2i\propto}} \Rightarrow$$

$$\frac{e^{2i\propto} * i * d\propto}{1 - e^{2i\propto}} = \frac{dm}{m} \Rightarrow \ln m = -\frac{1}{2} * \ln\left(e^{2i\propto} - 1\right) + k \Rightarrow m = \frac{e^{k_2}}{\sqrt{e^{2i\propto} - 1}} \Rightarrow$$

$$m^2 = \frac{e^{2k_2}}{e^{2i\propto} - 1} = -\frac{e^{2k_2} * e^{k_1}}{t} \Rightarrow (m * i)^2 = \frac{e^{(2k_2 + k_1)}}{t}$$

$$\xRightarrow[\textbf{Per t=0 s=i*}\boldsymbol{\rho}]{}$$

$$s = c * e^{i\propto} * t + i * \rho \Rightarrow v = \frac{ds}{dt} = c * e^{i\propto} + i * \frac{d\rho}{dt}$$

$$v = c * e^{i*\propto} - c * i * \text{sen}\propto$$

$$\Rightarrow i * \frac{d\rho}{dt} = -c * i * \text{sen}\propto$$

$$\frac{ds}{dt} = c * \cos\propto \Rightarrow i * \frac{d\rho}{ds} = -i * \tan\propto \Rightarrow \frac{d\rho}{\rho * d\propto} = -\tan\propto \Rightarrow \frac{d\rho}{\rho} = -\tan\propto d\propto \Rightarrow$$

$$\Rightarrow \ln\rho = -\ln|\cos\propto| + k = \ln\frac{1}{\cos\propto} + \ln e^k \Rightarrow \ln\frac{\rho}{e^k} = \ln\frac{1}{\cos\propto} \Rightarrow \frac{\rho}{e^k} = \frac{1}{|\cos\propto|} \Rightarrow$$

$$\Rightarrow \frac{ds}{d\propto} = e^k * \frac{1}{|\cos\propto|} \Rightarrow ds = e^k * \frac{d\propto}{|\cos\propto|} \Rightarrow s = e^k * \ln(\tan\propto + \frac{1}{\cos\propto}) = e^k * \ln(\frac{d\rho}{ds} + \frac{\rho}{e^k}) =$$

$$\frac{ds}{dt} = c * \cos\propto$$

$$\frac{d\rho}{dt} = -c * i * \text{sen}\propto$$

$$\frac{\frac{d\rho}{dt}}{\frac{ds}{dt}} = \frac{-c * i * \text{sen}\propto}{c * \cos\propto} = \frac{d\rho}{ds} = -i * \tan\propto$$

$$\left(\frac{ds}{dt}\right)^2 + \left(\frac{d\rho}{dt}\right)^2 = c^2 \Rightarrow (ds)^2 + (d\rho)^2 = (c * dt)^2$$

$$dt = \frac{-2 * i * e^{2i\propto}}{e^{k_1}} * d\propto \Rightarrow (dt)^2 = \frac{-4 * e^{4i\propto}}{e^{2*k_1}} \Rightarrow (ds)^2 + (d\rho)^2 = -4 * c^2 * \frac{e^{4i\propto}}{e^{2*k_1}} (d\propto)^2$$

ESPRESSIONI NOTEVOLI

$\frac{v}{c} = e^{i*a} = \cos\propto + i * \sin\propto$

$\frac{c}{v} = e^{-i*a} = \cos\propto - i * \sin\propto$

$\frac{v}{c} - \frac{c}{v} = \cos\propto + i * \sin\propto - (\cos\propto - i * \sin\propto) = 2 * i * \sin\propto$

$v^2 - c^2 = 2 * c * v * i * \sin\propto \Rightarrow i * \sin\propto = \frac{v^2 - c^2}{2cv}$

$\frac{v}{c} + \frac{c}{v} = \cos\propto + i * \sin\propto + (\cos\propto - i * \sin\propto) = 2 * \cos\propto$

$v^2 + c^2 = 2 * v * c * \cos\propto \Rightarrow \cos\propto = \frac{c^2 + v^2}{2cv}$

$v = c * e^{i*\propto} = c * (\cos\propto + i * \sin\propto) \Rightarrow$

$$\mathbf{v = c * \left[\frac{v^2 + c^2}{2cv} + \frac{v^2 - c^2}{2cv}\right]}$$

Ove

$\frac{\mathbf{v^2 - c^2}}{\mathbf{2cv}} = \mathbf{i * \sin}\propto$

$\frac{\mathbf{v^2 + c^2}}{\mathbf{2cv}} = \mathbf{\cos}\propto$

$\frac{v^2 - c^2}{v^2 + c^2} = i * \tan\propto$

$v = 0 \text{ per } \propto = \text{arctang}(i)$

$v = c \text{ per } \propto = n * \Pi$

(Condizioni di contorno a cui si giunge per via analitica anche canonica).

Ulteriormente:

$\frac{(c^2 + v^2)^2}{4c^2v^2} = (\cos\propto)^2$

$\frac{(v^2 - c^2)^2}{4c^2v^2} = (i * \sin\propto)^2 = -(\sin\propto)^2$

$\cos 2\propto = \frac{c^4 + v^4}{2c^2v^2}$

$i * \sin 2\propto = \frac{v^4 - c^4}{2c^2v^2}$

$$v^2 = c^2 * \left(\frac{v^4 + c^4}{2c^2v^2} + \frac{v^4 - c^4}{2c^2v^2}\right)$$

Nella costante complessa non è così più indicata l'unità immaginaria.

Nell'espressione $\frac{v}{c} = e^{i*a}$ ad una lettura $+\propto$ cambiando il verso di lettura dell'angolo, di fatto ne otteniamo il valore reciproco $\frac{c}{v} = e^{-i*a}$, avremo, di fatto, scambiato quanto si intende per intervallo di spazio e quanto si intende per intervallo di tempo.

La corrispondenza è quella di una lettura che pur mantenendo invariata l'origine dell'osservatore ne misuri la progressione esternamente all'elemento geometrico (la somma degli angoli interni pari al п, quella esterna pari al 2п, di un poligono regolare che per elementi infinitesimi dei lati degenera nella circonferenza).

> **"Ciò che dall'esterno misurerei col metro, dall'interno ne conterei i secondi con l'orologio e viceversa".**

La precedente suggerisce di scrivere:

$$\frac{dv}{v} = i * d \propto$$

$$\frac{d\left(\frac{1}{v}\right)}{\frac{1}{v}} = -i * d \propto \Rightarrow d\left(\frac{1}{v}\right) = \frac{-i * d \propto}{v}$$

Rammentando che:

$$dv = -\frac{1}{v^2} * d\left(\frac{1}{v}\right) \Rightarrow dv = -\frac{1}{v^2} * \frac{-i * d \propto}{v} \Rightarrow dv = \frac{i * d \propto}{v^3} \Rightarrow v^3 dv = i * d \propto \Rightarrow$$

$$\int v^3 dv = \int i * d \propto \Rightarrow \frac{v^4}{4} = i * \propto + k \xRightarrow[\text{Per } \propto = 2n\pi \; v=c]{} \frac{c^4}{4} = i * 2n\Pi + k \Rightarrow k = \frac{c^4}{4} - 2n\Pi * i \Rightarrow$$

$$\frac{v^4}{4} - \frac{c^4}{4} = i * \propto - 2n\Pi * i \Rightarrow$$

$$\mathbf{v^4 - c^4 = 4 * i * (\propto - 2n\pi)}$$

LA COSTANTE COMPLESSA

Ora rammentando le espressioni:

$$\frac{v^2-c^2}{2cv} = i * \sin\propto \Rightarrow v^2 - c^2 = 2cv * i\sin\propto$$

$$\frac{v^2+c^2}{2cv} = \cos\propto \Rightarrow v^2 + c^2 = 2cv * i\cos\propto$$

Moltiplicando e sostituendo:

$$(v^2 - c^2) * (v^2 + c^2) = 4 * c^2v^2 * i*\sin\propto * \cos\propto \Rightarrow$$

$$4 * i * (\propto - 2n\sqcap) = 4 * c^2v^2 * i*\sin\propto * \cos\propto \Rightarrow$$

$$(\propto - 2n\sqcap) = c^2v^2 * \sin\propto * \cos\propto = c^2v^2 * \frac{\sin 2\propto}{2} \Rightarrow$$

$$c^2v^2 = \frac{2(\propto - 2n\sqcap)}{\sin 2\propto} \Rightarrow$$

$$\mathbf{v^2 = \frac{1}{c^2} * \frac{2(\propto - 2n\pi)}{\sin 2\propto}}$$

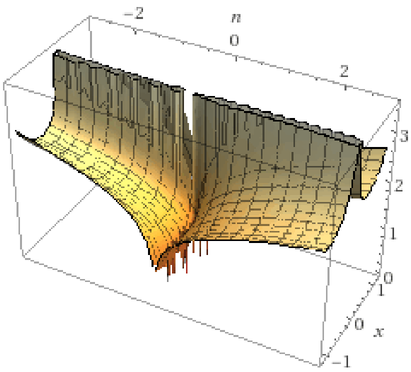
Dalla stessa espressione:

$$v^4 - c^4 = 4 * i * (\propto - 2n\sqcap) \Rightarrow$$

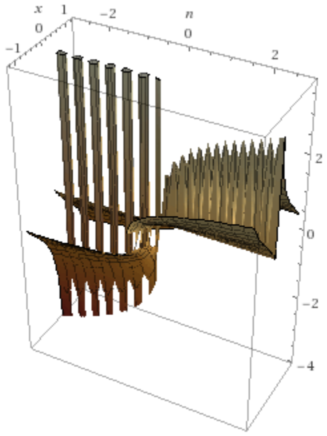
$$c^4 * e^{4i\propto} - c^4 = 4 * i * (\propto - 2n\sqcap) \Rightarrow$$

$$c^4 * \left(e^{4i\propto} - 1\right) = 4 * i * (\propto - 2n\sqcap) \Rightarrow$$

$$\mathbf{c^4 = \frac{4 * i * (\propto - 2n\pi)}{(e^{4i\propto} - 1)}}$$



Parte reale di c



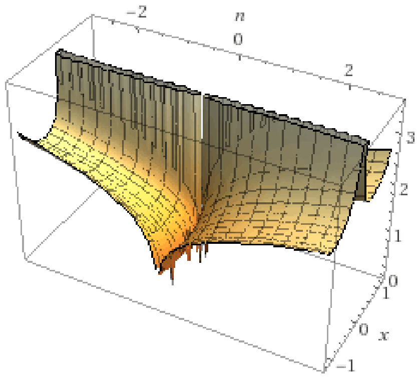
Parte immaginaria di c

Ulteriormente:

$v^4 - v^4 * e^{-4i\propto} = 4 * i * (\propto -2n\Pi) \Rightarrow$

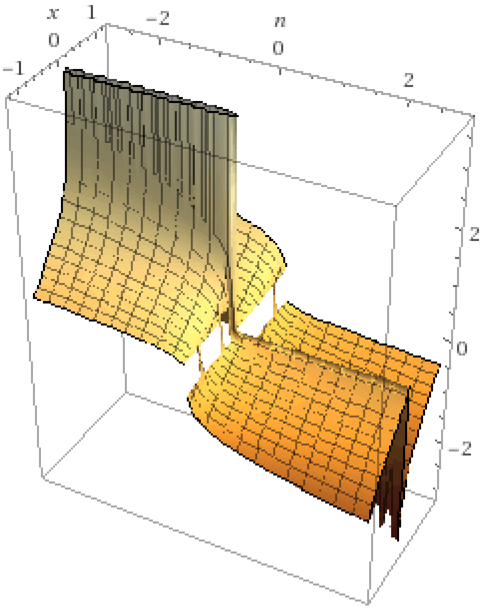
$v^4\left(1 - e^{-4i\propto}\right) = 4 * i * (\propto -2n\Pi) \Rightarrow$

$$\mathbf{v^4 = \frac{4 * i * (\propto -2n\pi)}{(1 - e^{-4i\propto})}}$$



Parte reale di v

La parte reale ($c * \cos \propto$), resta invariata, cambia di segno invece l'argomento della parte immaginaria ($c * i * \sin \propto$), la scelta di segno coniuga di fatto il valore complesso.



Parte immaginaria di v

$$c^4 * v^4 = \frac{4 * i * (\propto -2n\Pi)}{(e^{4i\propto} - 1)} * \frac{4 * i * (\propto -2n\Pi)}{(1 - e^{-4i\propto})} \Rightarrow$$

$$c^4 * v^4 = -\frac{16*(\propto-2n\Pi)^2}{(e^{4i\propto}-1)*(1-e^{-4i\propto})} == -\frac{16*(\propto-2n\pi)^2}{e^{4i\propto}-1-1+e^{-4i\propto}} = -\frac{16*(\propto-2n\pi)^2}{e^{4i\propto}-1-1+e^{-4i\propto}} = \frac{-16*(\propto-2n\pi)^2}{-4*(\sin 2\propto)^2} \Rightarrow$$

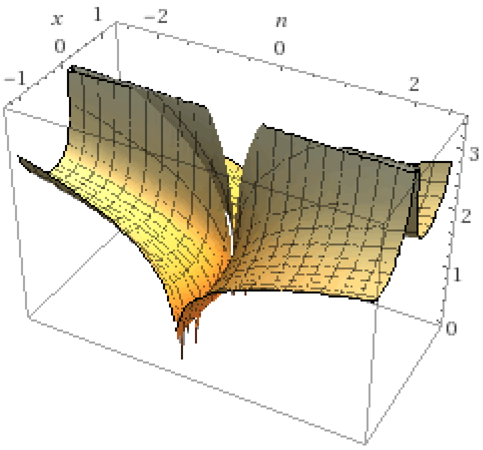
$$c^4 * v^4 = \frac{4 * (\propto -2n\pi)^2}{(\sin 2 \propto)^2} \Rightarrow c^2 * v^2 = \frac{2 * (\propto -2n\pi)}{(\sin 2 \propto)}$$

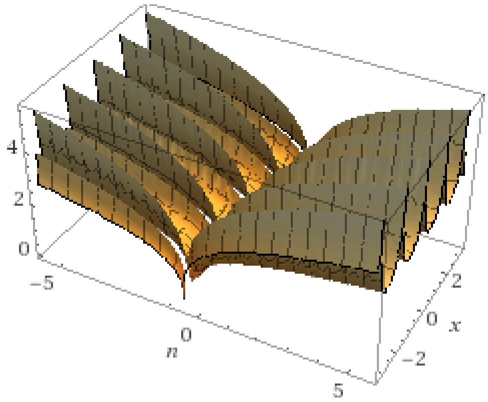
c.v.d.

$$\mathbf{c^2 * v^2 = \frac{2 * (\propto -2n\pi)}{(\sin 2 \propto)}}$$

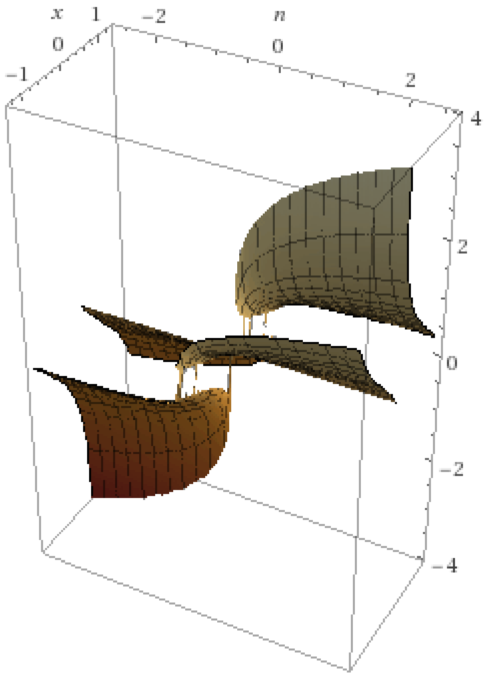
$$c^4 = \frac{2 * (\propto -2n\pi)}{(\sin 2 \propto)} e^{-2i\propto}$$

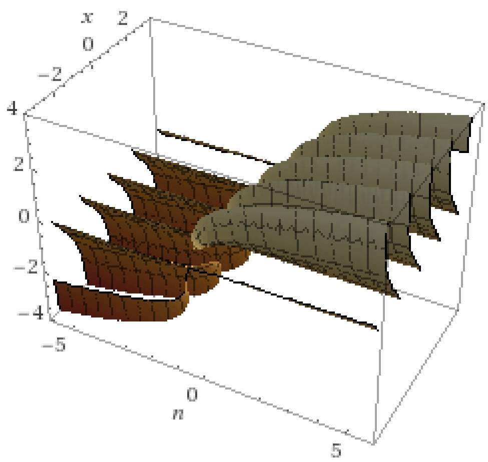
$$c = \sqrt[4]{\frac{2 * (\propto -2n\pi)}{(\sin 2 \propto)} e^{-2i\propto}}$$





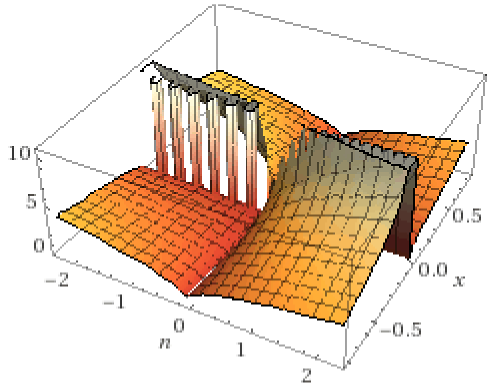
Parte reale di c



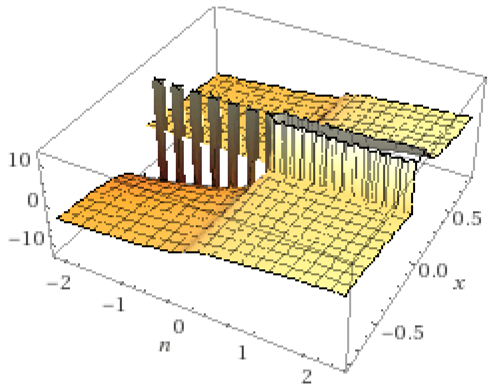


Parte immaginaria di c

$$c^2 = \sqrt[2]{\frac{2*(\propto -2n\pi)}{(\sin 2\propto)}e^{-2i\propto}}$$



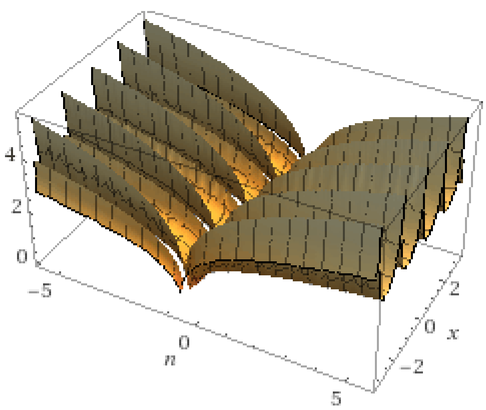
Parte reale di c^2



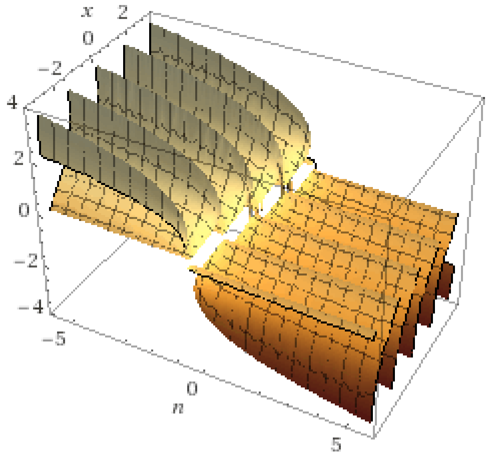
Parte immaginaria di c^2

$$v^4 = \frac{2 * (\propto - 2n\pi)}{(\sin 2 \propto)} e^{2i\propto}$$

$$v = \sqrt[4]{\frac{2 * (\propto - 2n\pi)}{(\sin 2 \propto)} e^{2i\propto}}$$

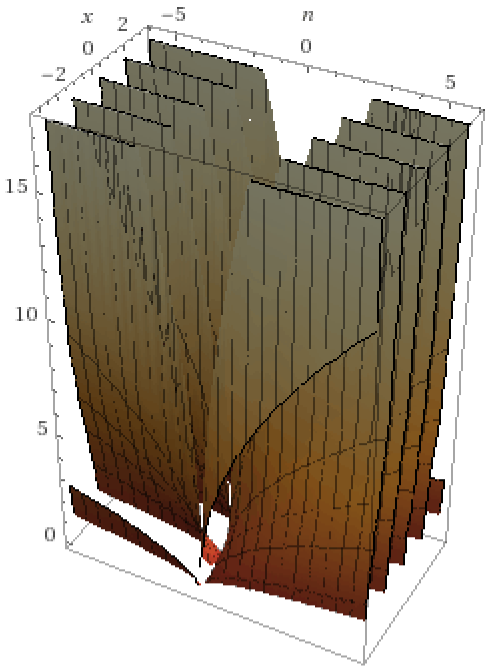


Parte reale di v

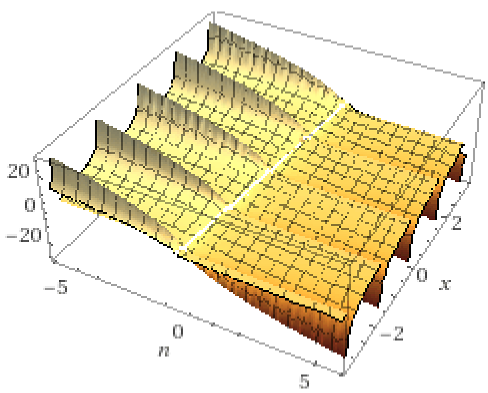


Parte immaginaria di v

$$v^2 = \sqrt[2]{\frac{2 * (\propto -2n\pi)}{(\sin 2 \propto)}}e^{2i\propto}$$

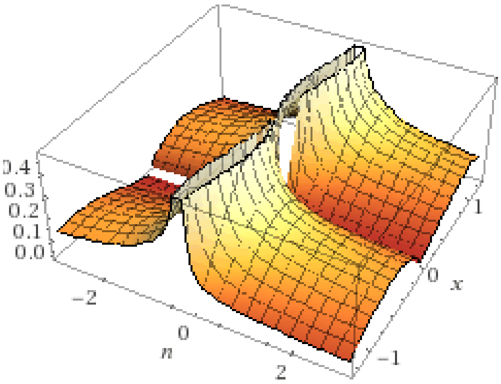


Parte reale di v^2

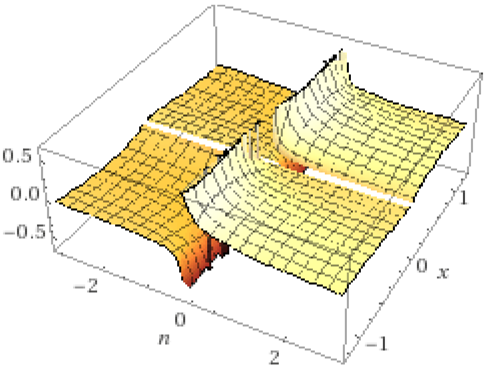


Parte immaginaria di v^2

$$\frac{1}{v^2} = \left(\frac{2 * (\propto - 2n\pi)}{(\sin 2 \propto)} e^{2i\propto}\right)^{-1}$$



Parte reale di $\frac{1}{v^2}$



Parte immaginaria di $\frac{1}{v^2}$

$$v^4 + c^4 = \frac{2*(\propto - 2n\pi)}{(\sin 2\propto)} * \left(e^{-2i\propto} + e^{2i\propto}\right) = \frac{2*(\propto - 2n\pi)}{(\sin 2\propto)} * 2 * \cos 2 \propto = \frac{4*(\propto - 2n\pi)*\cos 2\propto}{\sin 2\propto}$$

$$v^2 = c^2 * \left(\frac{v^4+c^4}{2c^2v^2} + \frac{v^4-c^4}{2c^2v^2}\right) = c^2 * \left(\frac{4*(\propto - 2n\pi)*\cos 2\propto}{\sin 2\propto * 2c^2v^2} + \frac{4*i*(\propto - 2n\pi)}{2c^2v^2}\right) \Rightarrow$$

$$v^4 = 2 * (\propto - 2n\pi) * (\cot 2 \propto + i)$$

$$c^2 = v^2 * \left(\frac{v^4+c^4}{2c^2v^2} - \frac{v^4-c^4}{2c^2v^2}\right) = v^2 * \left(\frac{4*(\propto - 2n\pi)*\cos 2\propto}{\sin 2\propto * 2c^2v^2} - \frac{4*i*(\propto - 2n\pi)}{2c^2v^2}\right) \Rightarrow$$

$$c^4 = 2 * (\propto - 2n\pi) * (\cot 2 \propto - i)$$

$$v^4 * c^4 = 4 * (\propto - 2n\pi)^2 * (\cot 2 \propto - i)(\cot 2 \propto + i) = 4 * (\propto - 2n\pi)^2 * ((\cot 2 \propto)^2 + 1) =$$

$$v^4 * c^4 = 4 * (\propto - 2n\pi)^2 * \left(\frac{1}{\sin 2 \propto}\right)^2 \Rightarrow$$

$$v^2 * c^2 = 2 * (\propto - 2n\pi) \quad * \left(\frac{1}{\sin 2\propto}\right) \quad \text{c.v.d.}$$

$$\frac{v^4}{c^4} = \frac{(\cot 2\propto + i)}{(\cot 2\propto - i)} = \frac{(\cos 2\propto + i*\sin 2\propto)}{(\cos 2\propto - i*\sin 2\propto)} = \frac{e^{2i\propto}}{e^{-2i\propto}} = e^{4i\propto} \quad \text{c.v.d.}$$

$$v^4 - c^4 = \frac{2 * (\propto - 2n\pi)}{(\sin 2 \propto)} * \left(e^{-2i\propto} - e^{2i\propto}\right) = -\frac{4 * (\propto - 2n\pi)}{(\sin 2 \propto)} * i * \mathrm{sen}\, 2 \propto$$

$$\frac{dm}{m} = \frac{v * dv}{c^2 - v^2} \Rightarrow$$

$$\int \frac{dm}{m} = \int \frac{v*dv}{c^2-c^2} = \int \frac{v^2*i*d\propto}{-2cv*i\sin\propto} = \int \frac{v*i*d\propto}{-2c*i\sin\propto} = \int \frac{v*d\propto}{-2c*\sin\propto} = \int -\frac{1}{2}\frac{e^{i*\propto}*d\propto}{\sin\propto} \Rightarrow \ln\frac{1}{m^2} = \ln e^k\big(1-$$

e2i∝ Per ∝=π2

1m2π2=ek1−e2iπ2=2∗ekek=12∗m2π2−k=ln2∗m2π22m2=1−e2i∝m2π2

Per $\propto=\frac{\pi}{2} \Rightarrow v = c*i$

Possiamo ulteriormente scrivere:

$$-2*\int\frac{dm}{m} = \int\frac{e^{i*\propto}*d\propto}{\sin\propto} = \int\frac{e^{i*\propto}*d\propto}{\sin\propto} = \frac{\cos\propto+i*\sin\propto}{\sin\propto}d\propto = \ln\sin\propto + i*\propto - k_1 \xRightarrow[\text{Per }\propto=\frac{\pi}{2}]{} \ln\frac{1}{m^2\left(\frac{\pi}{2}\right)} = i*$$

$$\frac{\pi}{2} - k_1 \Rightarrow k_1 = \ln\frac{1}{m^2\left(\frac{\pi}{2}\right)} + i*\frac{\pi}{2} \Rightarrow \frac{1}{\sin\propto*m^2} = i*\propto - \left(\ln\frac{1}{m^2\left(\frac{\pi}{2}\right)} + i*\frac{\pi}{2}\right) \Rightarrow$$

$$\frac{v^4}{c^4} = \frac{(\cot 2\propto+i)}{(\cot 2\propto-i)} = \frac{d(\ln\sin\propto+i*\propto)}{d(\ln\sin\propto-i*\propto)} = \frac{d(\ln\sin\propto+i*\propto)}{d(\ln\sin\propto-i*\propto)} = \frac{-2*\frac{dm}{m}}{d(\ln\sin\propto-i*\propto)} = \frac{2*\frac{dm}{m}}{d(-\ln\sin\propto+i*\propto)} = \frac{2*\frac{dm}{m}}{d\left(\ln\frac{1}{\sin\propto}+i*\propto\right)} =$$

$$-\frac{1}{m^2}$$

$$\frac{v^2-c^2}{2cv} = i*\sin\propto \Rightarrow v^2 - c^2 = 2cv*i*\sin\propto$$

$$\frac{v^2+c^2}{2cv} = \cos\propto \Rightarrow v^2 + c^2 = 2cv*\cos\propto \Rightarrow v^2 = 2cv*\cos\propto - c^2$$

LO SCALARE DI MASSA

$$\frac{dm}{m} = \frac{v * dv}{c^2 - v^2} \Rightarrow$$

$$\frac{dm}{m} = \frac{v^2 * i * d\propto}{c^2 - v^2} = \frac{v^2 * i * d\propto}{c^2 - v^2} = \frac{\left(c^2 - 2cv * \cos\propto\right) * i * d\propto}{2cv * i * \sin\propto} = \left(\frac{1}{2}\frac{c * d\propto}{v * \sin\propto} - \frac{\cos\propto}{\sin\propto}\right) d\propto = \frac{1}{2}\frac{e^{-i*\propto} * d\propto}{\sin\propto} - \frac{\cos\propto * d\propto}{\sin\propto} =$$

$$\frac{1}{2}\frac{(\cos\propto - i * \sin\propto) * d\propto}{\sin\propto} - \frac{\cos\propto * d\propto}{\sin\propto} = \frac{1}{2}\frac{(\cos\propto) * d\propto}{\sin\propto} - \frac{i * d\propto}{2} - \frac{\cos\propto * d\propto}{\sin\propto} = -\frac{i * d\propto}{2} - \frac{1}{2}\frac{(\cos\propto) * d\propto}{\sin\propto}$$

$$\int -2 * \frac{dm}{m} = \int i * d\propto + \frac{(\cos\propto) * d\propto}{\sin\propto} \Rightarrow -2 * \ln m = i * \propto + \ln \sin\propto + k \Rightarrow$$

$$\Rightarrow i * \propto + k = \ln\frac{1}{m^2 * \sin\propto} \Rightarrow \frac{1}{m^2 * \sin\propto} = e^{i*(\propto + k)} \Rightarrow m^2 = \frac{e^{-i*(\propto + k)}}{\sin\propto} \Rightarrow m = \sqrt[2]{\frac{e^{-i*(\propto + k)}}{\sin\propto}}$$

$$e^{i*\pi} + 1 = 1 + i * i = 0 \Rightarrow$$

Il valore $\propto = \tan^{-1}(i)$ rende la costante complessa nulla, è un valore dell’angolo $\propto$ tale che:

$$\sin\propto = i$$

$$\cos\propto = 1$$

Il valore unitario della parte immaginaria pari all’unità immaginaria e il valore unitario della parte reale, pari all’unità reale.

METAFISICA

La costante complessa traduce analiticamente la res extensa (geometria, lettura del/nel reale) e la res cogitans (potenziale immaginario) della formulazione filosofica del Cartesio, un valore costante è un valore complesso dove quanto misuriamo nel reale è l’altra faccia della medaglia di quanto ci informiamo (il pensiero): due letture reciproche, due convenzioni di misura positiva dell’alfa. I due assi, quello reale e quello immaginario, hanno entrambi valenza fisica, solo l’origine dell’informazione ne contemplerebbe l’interezza, un valore costante arbitrario, ma per tale osservatore non ci sarebbe alcun discernimento tra il valore misurato di estensione geometrica e temporale.

“All’origine dell’informazione di quanto misuriamo nello scalare di massa un osservatore che volesse misurare i propri passi, ne converrebbe un tempo di percorrenza identicamente pari al tempo per percorrerli”.

Sorridendo aggiungeremmo: per percorrere un percorso impieghiamo un tempo sempre identicamente pari al tempo impiegato per percorrerlo, quale

sia sia la discretizzazione geometrica dello spazio che avremo voluto misurare e di cui calcolarne il tempo di percorrenza.
La nozione di spazio e di tempo interviene solo in un modello, quale è quello algebrico, ove è implicito averne due misure, una di chi intendiamo essere il soggetto che osserva e l'altra di chi intendiamo essere l'oggetto di osservazione.
Questa analisi è il Dubbio del Cartesio riguardante il proprio stato di veglia e di sonno. Se nel pensiero del Cartesio l'osservatore osservasse se stesso, mai potrà discernere tra realtà e sogno.

CONSIDERAZIONI

- Più velocemente percorriamo lo spazio, meno tempo avremo a disposizione per misurarlo, viceversa, meno velocemente lo percorriamo, maggiore sarà la distanza che misuriamo percorsa.
- Quanto allo spazio ed al tempo, analiticamente non intervengono nella medesima lettura estesa e difatti lo spazio lo misuriamo, il tempo invece lo contiamo.
- Due variabili postulate indipendenti, hanno valenza fisica solo nel valore del loro rapporto o del reciproco di tale rapporto, in generale lo spazio fisico presuppone il rapporto tra chi osserva e chi ne è oggetto di osservazione, vive di tale rapporto.
- Quanto maggiore è l'informazione, tanto maggiore è l'estensione geometrica di quanto siamo informati. Dovessimo per assurdo o per postulato, contemplare l'informazione nella sua interezza, non avremmo più tempo per estenderne geometricamente il risultato dell'esperienza.
- Il luogo geometrico postulato conservativo, resta conservativo nelle espressioni, pertanto la distanza tra due punti ivi appartenenti dipenderà solo dalla posizione degli stessi e non dal percorso per raggiungere di tale posizione.
- Lo zero non è il Nulla, ma il valore unitario misurato con opposta convenzione di segno, quanto geometricamente potremmo percorrere della distanza infinita tra due valori simmetrici di segno opposto, infiniti valori di numerazione infinita quanto lo sono il numero potenziale delle nostre osservazioni.
- E' arbitrarietà dello Scrivente ritenere che le equazioni di Maxwell per il campo elettromagnetico, possano facilmente sostituirsi con espressioni analoghe ove al campo elettrico si sostuisca l'estensione spaziale e al campo magnetico l'estensione temporale.
- Il concetto stesso di Entropia suggerisce che ad una deformazione plastica dell'informazione, ne debba di contrappasso risultare una costanza, una invarianza, per chi ne osservi un risultato che non si replica identico se non potendo cambiare di segno la misura dello scorrimento, all'atto stesso della misura.
- La certezza dell'informazione origina un contenuto nullo della stessa.

DIRITTI D’AUTORE

Quando mi accingevo a scrivere le mie espressioni il primo pensiero fu quello di ritenere che mai avrei accettato che i quadratini del foglio di carta, quanto avevo postulato di riferimento univoco a quanto tracciavo con la matita, potesse esserne deturpato in alcun modo dalla mia mano e dalla mia stessa scrittura. Se così fosse stato, se al solco ne avessi deturpato le distanze, le dimensioni, il riferimento, la squadrettatura, non avrei potuto scriverne ulteriori contenuti miei e soprattutto altrui.

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In Fede
Marco De Lorenzo