Konservation & Knergy

1 Contents

2 Introduction

Whenever, we think about energy, the first thing that comes to mind is 'it is conserved'. The concept of conservation predates human intellect. Birds return to there nests with the belief that they will find nest on return. Natural Conservation of objects in daily life and human sensory organs helped develop this concept. Conservation concept is invariance in measure of parameter of an object subject to natural forces acting to change other parameters.

The concept of Konservation in Pico-Physics is on measure of substance contained in an object. Konservation is applied Knergy in Pico-physics. All matter and particle exist due to existence of this Knergy in them. The two 'Energy & Knergy' are independent concepts.

Conservation is applied to Energy. Einstein's equivalence of energy and mass brings it very close to role Knergy plays in Pico-Physics. In the context of Pico-physics, Energy and Knergy are two different levels. While Knergy is identified with very existence of matter, energy is identified as the measure of property grouping – capacity to do work, gravitate & inertia.

In the discussion, Knergy is introduced as a concept. The evaluation bellow begins with 'Concept of Conservation', and uses the understanding to define the term 'Konservation' and 'Knergy'.

3 Summary

Study of nature 'changes in phases of matter' led us to the concept of conservation. It was successfully applied to unify kinetic and gravitational energy. The scope of Energy as capacity to do work got extended to include heat, sound and light. This further got extended to mass. The success in unifying seemingly independent areas of human experience, using conservation increased in importance as it was extended to include neutralization. With this enrichment, creation and annihilation of particles can be merged with conservation. Thus neutralization became an integral part of conservation concept.

Knergy is single constituent of all matter. It has a natural unit of measurement. It measures to a finite number in this unit in any object and integrated over all objects in the universe. Knergy can not be created or destroyed. Konservation concept is related to Knergy as conservation is related to Energy. The difference between two concepts is absence of neutralization in Konservation.

To an observer, the difference in Energy and Knergy manifests in different ways. Knergy measures to a rational number, while Energy to a real number (Rational + Irrational). The infinite order of Knergy is zero while that of Energy is one. Traceability and continuity of path traveled by Knergy is another distinguishing factor. The natural unit for Knergy leads to quantization in nature.

The infinite order for Knergy is zero since it can not measure to infinite. Possible co-existence of Knergy with other identities is investigated. A concept of non-Konservation for identity is visualized. All identities represented by real number in mathematical expressions will not be Konserved. They will belong to identities with higher infinite order (>=1). A mapping density function is defined for mapping two identities with

different infinite order. This function is different than other mathematical relationships. It is seen that for conformal mapping to exist between identities, the difference in infinite order can not be greater than 1.

4 Energy

Whenever, we think about energy, the first thing that comes to mind is 'it is conserved'. The concept of conservation predates human intellect. Birds return to there nests with the belief that they will find nest on return. Natural Conservation of objects in daily life and human sensory organs helped develop this concept.

4.1 *Conservation in Contemporary Physics*

As humans we acquired knowledge by observing natural phenomenon and meditating on reasons for them to occur. Existence of natural forces much more powerful than the collective might of humans was hypothesized on this basis. Man explored his own intellect to hypothesis underlying factors to explain the natural phenomenon. The social system of the time picked certain of these hypotheses to be true and required to be believed by the society. This led people in different part of geography to form there own system of beliefs. As time passed, benefits of logical thinking gained in importance to mankind. Now such a hypothesis is tested much more rigorously before being accepted. Acceptance of hypothesis on independent verification led to birth of science.

Mankind now will attempt to hypothesis from intuition and lead experiments to establish or modify the same. Many in the east hypothesized that nature is composed of five elements and natural forces act on them to result in phenomenon observed by humans. Empirical Laws were developed leading to atomicity of matter and Newtonian mechanics governing there interactions. This enabled better understanding about the forces of nature. From here evolved the concept of transformation (conversion of matter - gas/liquid/solid phases). Quantitative Conservation 'in transformation provides the basic conservation concept – 'no creation or destruction'.

Initially forces were identified with energy and substance with mass. Mass was considered to be conserved – measures to same amount under physical transformation (Solid<>Liquid<>Vapor/gas). In Newtonian times we understood energy as capacity to do work. It presented energy (Capacity to do work) in multiple forms; Kinetic, gravitational, internal (twisted spring) etc. Mutual conversion between energy forms was

established. Conservation (from conservation of mass) was readily applied to energy as well. As science developed, conservation got applied to momentum, electrostatic charge etc.

Neutralization enriched the concept of conservation. Successful inclusion of Neutralization led many to hypothesis creation and destruction of matter. Many hypotheses were proposed like negative energy, tachyons, anti-particles etc. that will possibly answer the human inquisitiveness' about origin of universe.

Relativity merged the two conservation concepts on mass & energy into one with famous $E = MC^2$, which removed the distinction between mass and energy. It spelled out that mass and energy are the same. It is the perspective of the experiment or observation that you visualize the parameter as energy or mass. The challenge of wave particle duality got subdued as a result. From challenge wave particle duality got accepted as a fundamental property of the Universe.

The concept of conservation transformed itself from 'no creation or destruction' to include neutralization, creation and annihilation. A parameter is conserved when its measure is invariant with respect to changes in other properties.

Contemporary Physics uses the concept of conservation to describe the behavior and properties of matter which on quantitative evaluation lead to a conclusion of invariance to change.

5 Konservation in Pico-Physics

The concept of conservation in Pico-Physics is named Konservation. It is based around measure of substance contained in an object. All matter and particle exist due to existence of this substance in them. This concept is devoid of any neutralization as seen in conservation of charge or momentum. A change in understanding of conservation is the key to integrate the thought processes in Pico-physics. In Pico-physics, conservation reverts back to the concept of 'no creation or destruction' to exclude neutralization, creation and annihilation. The rigidity imposed on the substance, enables Pico-physics to formulate laws for interaction of this substance with space.

Konservation 'Conservation Sans Neutralization' has the following peculiarities;

5 . 1 *Quantitative Evaluation*

The exclusion of neutralization takes away creation & annihilation as valid processes that can affect the Quantitative Evaluation. It firms up quantitative evaluation. The unit objects and measured objects both have firm amount of Knergy constituting them. This is the basis of measurements. If either unit or measured object amounts were function of time, change, environments or observer, we will not be able to get to define even the symbols to represent quantity. The quantitative evaluation will not be consistent. The same is true for units as well. Thus the definition of unit itself, a requirement for measurement is not assured.

The power to measure is based on Konservation itself.

- Konservation denies creation, annihilation and neutralization.
- It enables definition of units to compare and measure quantity in different objects. Since, object is assured to represent same amount of substance over and over again. The amount of substance in an object is thus unambiguously defined.

5 . 2 *Abstraction using Mathematics*

Konservation enables the abstractions using mathematics axioms be applied to objects composed out of Knergy. Mathematics is a deterministic science. The quantity of Knergy can be varied by addition or removal of other objects. The resulting quantity can be un-ambiguously defined irrespective of units used. This results into application of mathematical operators leading to conclusive results.

Konservation property validates the current mathematical tools as applicable in Pico Physics.

6 Quantization of Matter

The number that can represent the measured value of Knergy has to be a finite number.

Let us assume, a transfinite number ℵ represent the measured value in Object A and finite number 'R' represent the measured value in Object 'B' in units 'Unts'. Let the object A and B combine into a composite object 'C'. The object 'C' includes both 'A' & 'B'.

Or

'C' = 'A' + 'B'	" Observed Reality
= ℵ + R Unts	" Measured Knergy
= ℵ Unts	" Computed Knergy of object C
= 'A'	" Is same as original object 'A'

Hence the Knergy in object 'B' is lost and composite object is the original object that measured to Transfinite ℵ Units. Thus Knergy in object B is lost or destroyed. This violates Konservation.

Knergy is Konserved and it's measure has to be represented by a finite number (A rational number).

If Knergy were continuously variable, a unit can be construed as difference in measure of Knergy between two very close objects. The unit will tend to zero (Thick Zero). In this case the measure of Knergy in individual objects becomes infinite (Represent able by transfinite number). Being Konserved, it can not be measured to a transfinite number. Hence the Knergy shall vary discreetly between objects.

The minimum difference in magnitude between objects can now be taken as a unit of measurement for the identity (Knergy). Now all other measured values shall be integer multiple of this value. If it is not the case, and there remains a fraction in at least one case, the remainder it-self can be taken as the unit. The argument can be repeated, till we arrive at a unit, using which, the measured quantity in all objects is integral multiple of unit value.

Hence, Konservation 'Conservation sans neutralization' not only provides power of measurement, but provides natural number and natural unit (of existence) to Knergy. Knergy in any object is represented as;

$K = n \times h$

Where K is a measure of Knergy, h is natural unit of Knergy, and n a natural/counting number. ('h' will later be seen to be related to plank's constant).

This natural unit can be seen as limitation on power of observer to observe Knergy, or inherent characteristic of Knergy. If it were possible to distinguish (label, assign a unique identity) between each unit of K-Energy in existence, we can say that any object is a subset of universal

set (very large but finite set), each element of which represents a unit of K-Energy.

Obj ⇔ {k1, k2, ... kn}

Where n is a positive Integer.

6.1 *Traceability*

Konservation denies creation and destruction. It also defines natural unit of measure. In any object, the amount constituting the object shall be multiple of this unit. Once separated from collection, the unit of Knergy keeps its identity. In an object, its identity may merge with identity of object, but it is still visible in measure of the object.

Let us trace the path of Knergy. If we device a closed surface, enclosing the object, then any transaction of Knergy across this surface shall be offset by change in Knergy value of the object. Mathematically it is represented by continuity equation. Knergy on leaving the object (volume occupied by object), can not go out unless it moves across the enclosing surface.

The path of Knergy quant shall be continuous, since, if it is not; a closed surface can be conceived, passing though the discontinuity. Now Knergy of object is seen to decrease without experience of unit object moving across the enclosing surface. This is denied due to Konservation. Hence path followed by Knergy is continuous with its measure retaining the value all along the path.

In case of neutralization, a provision exists to create an abnormality by particle annihilation and neutralization. Thus the path is continuous, till the object meets its nemesis. Contemporary energy has to make way for uncertainty principles to allow for discontinuity across potential barriers. So path continuity of contemporary energy is fuzzy.

7 Definition of Knergy

The identity Knergy by definition (as Konserved identity) has following characteristics;

1. Measures to a finite whole number in natural units
2. Moves along a continuous path
3. Can not be created or destroyed

4. Measurability – Can be measured
5. Computability - Validates the current mathematical tools as applicable in Pico Physics
6. Natural Unit – There exists a natural unit of Knergy

By Knergy, in Pico-physics, we mean a Konserved substance that constitutes all objects with a natural unit of measure. The quantity of substance in an object can only be discrete multiple of this unit.

8 Pseudo Konservation

Energy is Pseudo Konserved, or conserved. There is no evidence of existence of negative energy. No evidence exists of its neutralization. In absence of negative energy, contemporary energy is Konserved. However;

1. It can be measured to infinite number as it is continuously variable. The measure can be represented by a real number.
2. Its measured magnitude is ambiguous (uncertain), depends on state of observer and interaction used to measure.

Energy is therefore said to be pseudo-Konserved.

8.1 *Measurements with observer dependency*

To measure, we need the capability to observe identities of Objects and Units. Object measurements are relative to a unit object. Between two observers an agreement to content of unit object to be same shall exist. This agreement is translated to the object value, when the observer measures the same object independently. This leads to an intuitive understanding between observers about interpreting each others results.

Consider two observers (O & P) independently observe and measure a as amount of Konserved identity 'A' in an object. They use same (natural) unit object to define the unit of observation. Since, there is no ambiguity in unit; the identity will measure up to same number for both observers.

In case, of pseudo conservation, when same physical objects are participating in observation, the object will be measured to same number by different observers. If same unit object is the basis for definition of unit for both observers, then the measure of the object is same and un-ambiguous.

However the unit value can be ambiguous as it is not a natural unit. It leaves scope to define content of unit object to a different value for different observers. Assignment of different value to same physical object by different observers can not be ruled out.

Measured value is observer dependant for pseudo Konserved identities.

9 Knergy Vs Energy

9 . 1 *Energy of an object is continuously variable*

Energy of photon is given by E = hf. Here frequency (inverse of time), is continuously variable, and hence the energy of photon. We can conceive unit of energy identified with photon of any frequency. Now energy an object can posses is represented by a real number. It is continuously variable.

9 . 2 *Ambiguous measurements*

Two observers unless being stationery in same inertial reference frame, don't agree with the energy of photon or in fact any other material object. In fact, if energy of two photons is seen to be equal by one observer, the other observer will see it to be different unless photons are seen to be moving in same direction as well, relative to each other, by both observers (Visualization of Doppler effect & De-Broglie's principle). Even if unit object is shared by two observers, the measured value of energy of an object is not identical. Not only the reference system, but location of observer relative to object affects the measured value of energy. Thus energy is not identified with the object definition, but a result of observation performed on the object.

9 . 3 *Konservation and Persistence*

The existence of K-Energy is postulated as a fact in Pico-physics. Its Konserved nature negates any question on its age as it can not be created or destroyed. K-Energy occupies space. It is possible to model this existence of K-energy in space. Konservation property also makes quantitative measurements possible. All objects are composed of integral multiple K-Energy units.

Persistence: The Energy of an object depends on the context – defined by the state of observer and object. In a uniform – consistent context,

the energy persists with the object. Persistence enables units of energy be created and energy measured within a given context. Translation across contexts can be studied using models describing change.

Pico-physics distinguishes between Konservation and persistence. The main difference being;

Differences	Persistence (Energy)	K-Energy (Konserved)
Units	No natural units	Natural Units exist
Number Representation	Quantity is represented by a real number.	Measures to discreet values (Rational Number)
Dependences	Amount depends on Context, Object, and Observer	Invariant Amount
Everlasting	No, Open to Pre-existence universe with creation hypothesis	Yes, No pre-existence universe. Can not be created or destroyed.
Traceability	Fuzzy path due to neutralization, uncertainty principle etc	Always follow continuous path

Energy persists despite change induced by forces of nature on the object, while Knergy is Konserved, it persists and measures to same amount irrespective of any change that can be induced by nature.

10 Density & Mapping

Density is expression of simultaneous measurement of two identities 'A&B' of an object expressed as a ratio. Since it is a ratio, it is invariant with respect to size of the object. If the two parameters are independent, the minimum object that can be subject of measurement is defined by the quantity of object for which either identity 'Say A' has a magnitude of one observable unit. The magnitude of 'B' represents the density 'B in A'.

If 'a' measures identity 'A' and 'b' measures identity 'B', the composite object with density σ = b/a represents mapping between 'A' and 'B' as {A:B::a:b}.

If there is a limitation on observing minimum unit quantity of either 'A' or 'B', it translates to quantitatively different limits on composite object.

If limitation on both A & B exists (A & B are Konserved), we have minimum as 'ab' (LCM of a & b) to define the unit for composite object (with σ is density B in A);

.

$$c = a(1+\sigma); \sigma = b/a.....where\_b.\&\ a\_are\_counting\_numbers$$

Then the minimum composite object shall contain greater than one unit of 'A' as well as 'B'. Konserved Identities ('A' and 'B') combine in simple proportion (in the composite object).

Konserved Identities combine in simple proportion.

If only 'A' is Konserved, the minimum composite object is

$$c = (1+\sigma); \sigma = b.....where\_b\_amount\_of\_B\_bounded\_to\_A\_per\_Unit$$

Even though, 'B' is not Konserved, the density can be used as a measurement on the amount bounded by each unit of A together.

Mapping provides means of measuring non Konserved identities, using the density function over Konserved identities.

Since, 'B' is not conserved, its magnitude is represented by a real number, so is the density σ. Any given magnitude can be represented as infinite using suitably scaled units of measure. Since the two are independent identities, one does not govern the unit for the other. One unit of 'A' now binds infinite quantity of 'B'. The identity 'A' is very thinly distributed over 'B'.

A finite quantity of Konserved identity can map infinite quantity of Non Konserved identity.

Or

Mapping of Konserved identity into non-Konserved identity is conformal.

Mapping of unit A into infinite B is conformal. Multiple (Finite) units of A can be mapped to multiple (infinite) units of B. The mapping A into B becomes non-conformal when measure of B reaches second infinite order. Any finite amount of A can not hold together all existing amount of 'B'.

Mapping of Konserved identity into non-Konserved identity of second infinite order is non-conformal.

It means, irrespective of units used, we can not construct solution set with each composite object (subset) containing both identities A & B.

10.1 *K-Energy in Observation Records*

The number q represents magnitude of Konserved reality 'Q'. The number q shall then be non-zero rational number (allowing for user defined units). Mathematically it can be stated as;

$q = a^2 + b^2$ ..... q, Positive and non-zero quantity . . . . (i)

a and b represent identities different than identity 'Q'. While mathematics operators are valid on measure of identity 'Q', they are not so for identity 'A' or 'B'.

However; in equation (i) a & b has to belong to real number (Square root of a rational number). The infinite order of real number is 1, since quantity expressed by a real number can be expressed as infinite number with suitably selected units. Thus expression on right-hand side of equation (i) is of infinite order 2. Infinite order of left-hand side is zero (counting or Rational Number). To keep the infinite order compatible between left and right-hand, review the equation (1) below;

$q = \sqrt[+]{a^2 + b^2}$ . . . . . (1)

Equation (1) describes the quantity as positive square root of sum of squares of two identity quantities. The identities 'A' & 'B' are represented by a real number of infinite order 1. They are therefore;

a) Measurable to infinite magnitude
b) Can be created and destroyed

Identities 'A' and 'B' are not Konserved while identity 'Q' is conserved.

Effect of varying the density of Q in A can be seen differentiating equation (1) above;

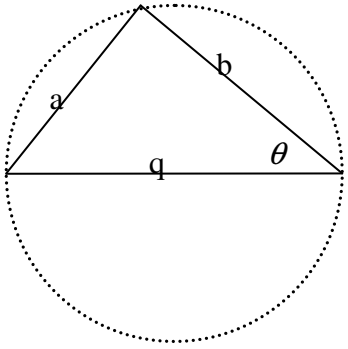
$q\partial q = a\partial a + b\partial b$

$\therefore \partial q / \partial a = a/q + b\partial b / q\partial a....(2)$

In a closed system, without transaction occurring with identity 'Q';

$\partial q = 0$

$\therefore \partial a / \partial b = -b/a.....(3)$



Equation (3) represents a mapping function between identities A & B. This mapping is indirect mapping, with control on values resting with a third Konserved identity Q.

10.2 *Glue Affect – reduction in degree of freedom*

The measure of 'B' is determined by identities 'A' and 'Q'. The solution to map A in B is given by

$\tan\theta = a/b$;with θ any valid value between 0 to 2π.

The indirect mapping between non Konserved identities thru a Konserved identity is a variable mapping. The variation of mapping density may not leave any direct impact (changes in Knergy or its status).

In the system composed of three identities, the degree of freedom is three, as there are three parameters that can change independently. In presence of Konserved identity, non-Konserved identities are glued, reducing degree of freedom by one.

11 Observer Limitation

General observer is defined as a concept observer with defined limitations on observation power. Even without any environment specific limitations, certain limitations are based on observed identity itself. Basic limitations on observer are;

1. Unable to measure identities with a gap of 2 or more infinite order with same unit.
2. Unable to directly experience & measure mutual conversion of linked non-Konserved identities
3. In relation to Konserved identities –measures to a rational number
4. Availability of a natural unit for Konserved identity, measure to an invariant amount
5. Experience non-conserved identities indirectly by characteristic of object composed of binding Knergy.

These along with deficient technology and knowledge about nature constitute the limitations that may exist on observer.

12 Discussion Results

Knergy is Konserved, while Energy is Pseudo Konserved. The infinite order of an identity defines limitations on power of observer to observe the identity. This limitation is based on units of observation available to

observer. General observer even without any environment specific limitations has basic limitations;

1. Unable to measure identities with a gap of 2 or more infinite order with same unit.
2. Unable to directly experience & measure mutual conversion of linked non-Konserved identities

These along with deficient technology and knowledge about nature constitute the limitations that may exist on observer.

A mapping density function is defined for mapping two linked identities with different infinite order. This function is different than other mathematical relationships. It enables quantitative evaluation of a non-Konserved identity. It also enables evaluation of Konserved identities which differ with infinite order of unit by greater than 2 (=>2).