

# Short Note on Unification of Field Equations and Probability

Mesut KAVAK

Is math in harmony with existence? Is it possible to calculate any property of existence over math? Is exact proof of something possible without pre-acceptance of some physical properties? This work is realized to analysis these arguments somehow as simple as possible over short cuts, and it came up with some compatible results finally. It seems that both free space and moving bodies in this space are dependent on the same rule as there is no alternative, and the rule is determined by mathematics.

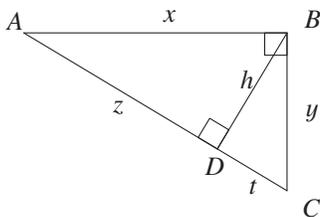
## 1 Introduction

It seems that matter is uncertain. Uncertainty brings some physical properties out together with itself. Matter emerges as a density over time by increasing acceleration as waves over free space being has time differences between any point of its free space. Space turns into particles and particles turn into space continual manner. Matter gains its mass by collecting space in a limited volume at light speed. During its emergence it constantly experiences potential difference since there are time differences in the other name emergence priority. There is a single work to create all the universe, and the work is done one by one for each point of free space and thus particles. By this way any point of the universe gets the same speed since the single work is done by the same speed as work-done is equal to kinetic energy. Total energy of matter is according to this creation work. Because of this reason matter cannot go faster than light as also cannot move at lower speeds since the light speed is the highest speed as also the lower is not possible. When an object moves from A to B in space, it means inner motion or in the other name its formation motion which brings energy for matter out during its continuous creation, moved to A to B at the creation speed. Matter uses the same space at the same time.

While matter experiences the potential differences, naturally there emerge some denser and low density and thus disordered or more ordered points. Disordered points want to be distributed on lower density or more ordered space points since have more stress. Matter gains its total energy because of the work done against this resistance of free space, that otherwise it would not be created since the existent smallest force can move the existent bigger mass magnitude at infinite speed.

The sliding space from disorder to more ordered point also takes the space points or particles together with itself since the they emerge over this sliding free space. Actual reason of force and energy is this gravity is included, and force is only distributed as waves over time along space.

## 2 Impossibility of perpendicularity



**Fig. 1:** Here is that famous right triangle about to be more famous. Actually any type triangle without any emerging right angle in it can be used instead; so also the others are going to be more famous soon.

There is a presentation of a right triangle on Fig. 1. Just think, that  $x$  is lengthened to any  $x_2$  value being the right angles are the same. Here,  $B$  is a point which its coordinate in space is known.  $C$  is the place an observer takes place in space. If  $A$  is, it is a moving body. You have already understood and have seen the secret geometry; but even so, I am going to tell it more detailed.

Over the inequality and definition of  $x_2 > x$ , it becomes (1) over the inequality of  $h_2^2 - h^2 > z^2 - z_2^2$ ,

$$1 > \frac{z^2 - z_2^2}{h_2^2 - h^2} \tag{1}$$

where  $h^2 + z^2 = x^2$  and  $h_2^2 + z_2^2 = x_2^2$  are the equations over Pythagorean theorem. In the same manner, it becomes (2),

$$h^2 + t^2 = h_2^2 + t_2^2 \tag{2}$$

where  $h^2 + t^2 = y^2$  and  $h_2^2 + t_2^2 = y_2^2$  are the equations over Pythagorean theorem. If (2) is edited, it becomes  $t^2 - t_2^2 = h_2^2 - h^2$ ; thus if  $t^2 - t_2^2$  is used instead of  $h_2^2 - h^2$  on (1), also it becomes (3) over  $t^2 - t_2^2 > z^2 - z_2^2$  inequality.

$$1 > \frac{z^2 - z_2^2}{t^2 - t_2^2} \tag{3}$$

Now the actual displacement inequalities have been determined. Right this point, assume, that there is no displacement namely no lengthening. For this condition, it becomes  $x_2 = 0$ ,  $t_2 = 0$  and  $z_2 = 0$ ; thus (3) becomes (4),

$$t^2 > z^2 \tag{4}$$

and (1) becomes (5).

$$-h^2 > z^2 \tag{5}$$

Hence it can never be  $z = t$ ; thus for  $z \neq t$ , it also becomes  $x \neq y$ ,  $h \neq z$ ,  $h \neq y$  and  $h \neq x$ . Namely, while  $x$  is lengthened,  $y$  cannot protect its actual length. The medium is conservative.

## 3 Uncertainty

If area is conservative then for 2 dimensional medium, it becomes Eq. (6),

$$dx dy = 0 \tag{6}$$

where  $ds = dx + dy$ ,  $ds^2 = dx^2 + dy^2$  and thus  $ds = ds^2$ . Here, even if the two components always change, sum of them is always conserved for any physical value for example as  $p = p_x + p_y$  and  $p^2 = p_x^2 + p_y^2$ . It means 2D motion is not possible.

In 3D space, the equation becomes Eq. (7),

$$dx \left( \frac{1}{dy} + \frac{1}{dz} \right) = -\frac{1}{2} \tag{7}$$

where  $ds^2 = dx^2 + dy^2 + dz^2$  and  $ds = dx + dy + dz$ .

There are five possibilities for motion's emergence type constantly or partially by some intervals as  $dx = dy = dz$ ,  $dx = dy$ ,  $dx = dz$  and  $dy = dz$  or none of them.  $dx = dy = dz$  equation is not possible when it is checked over Eq. (7). For the others, if  $dx$  is taken from Eq. (7), and then if it is put on its place on equation which is  $ds = dx + dy + dz$ , the equation becomes Eq. (7a).

$$ds = dy + dz - \frac{dy \cdot dz}{2(dy + dz)} \quad (7a)$$

Here, assume that it is  $ds^2 = dx^2 + dy^2$  which is the projection of the same  $ds$  during forming a sphere by  $ds^2 = dy^2 + dz^2$ , where  $dx = dz$  by the same angle vertically and horizontally according to a fixed reference; then Eq. (7a) becomes Eq. (7b).

$$dx^2 = dy \cdot dz + dz^2 - \frac{dy^2 \cdot dz^2}{4(dy + dz)^2} \quad (7b)$$

Over Eq. (7b), it can be said that  $dx = dy$  and  $dx = dz$  are not possible. For  $dy = dz$  equality, it becomes  $dx/dy = 33/16$ ; but if it is used on the main function Eq. (7), it seems that even it is not possible as well; therefore there is only one possibility left that none of them emerges even for any interval of motion, and the components are always different. They never intersect for any combination. Any point of free space has emergence priority due to the time differences

#### 4 Existence probability of uncertain bodies

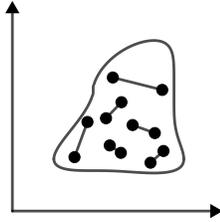


Fig. 2: Conservative area with a random closed curve

There is a random shaped closed curve on Fig. 2. Even if 2D is not possible, we are going to work on 3D over it.

Now think that some changing magnitude forces are applied to create mass in this area between two point. Any small point of are has emergence priority; thus they can never intersect even for increasing points; so if we turn the Fig. 2 into Fig. 3, it is also acceptable.

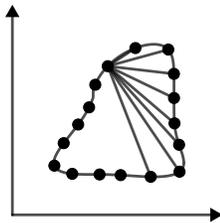


Fig. 3: Creating mass

On Fig. 3, assume that the force is applied from a point

to the other all point on the circumference being the distance between the points are the same. For this, as there is emergence priority and thus time difference for each small point of area; being  $n$  is total point number on the circumference, it can be  $n\Delta l_1$  as also can be  $n^2\Delta l_2$  where  $\Delta l$  is average length of the used to create an area; thus it becomes  $\Delta l_1 = n\Delta l_2$  over  $n^2\Delta l_2 = n\Delta l_1$ . It means, if you draw all lines only from one point to the other all point, you need more points on the circumference to scan or create and thus to converge the area. If you draw lines from each point to the other all points, then you do not need more points on the circumference, and both of them are acceptable since there is not going to be intersection point of lines as stated the above. In the same manner, the equation also becomes Eq. (8),

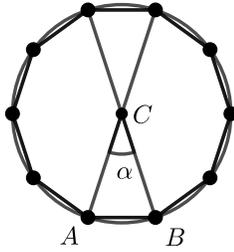
$$nE = A \quad (8)$$

where  $E = Fr$  over average length on  $\lim_{r_0 \rightarrow r} (F_1 r_0 + F_2 r_0 + \dots + F_n r_0)$  is total energy and  $A$  is total area. Here  $E$  and  $A$  does not converge over  $\lim_{n \rightarrow \infty}$ ; instead of it  $A$  is always fixed; so if you write  $\lim_{n \rightarrow \infty} E = A$ , it means zero energy which the area  $A$  on the horizon holds. To understand this, assume that you have a square has  $r$  side in accordance with abstract math. If you draw the closest parallel  $r$  lines to this side, you obtain the square and its  $r^2$  area; but also if you draw the lines as perpendicular, you obtain  $2r^2$  area. If you constantly repeat it, being  $f$  is repeat number, it has  $fr^2$  area; but in accordance with the time difference, it cannot exist such since there cannot be intersection point; so since there are infinite time differences and thus space allows this, during the process, the energy which the area holds decreases as it can be seen over Eq. (8) being the area is the same. This creates a density concept such as energy density or mass density which the area holds. Area does not specify energy, distance or mass. Assume that there are infinite kind of free space in absolute space; then area is the part which you closed on horizon as imaginary to calculate the physical values of the space which is in the borderlines of the area you closed. Space could be created in any way by changing physical values as independent on the area you closed. As a result,  $E$  is dependent on  $n$  inversely proportional being  $E$  is  $E(n)$ .

Any curve which is assumed as closed can also be defined in the kind of a circle for  $r = \sqrt{A/\pi}$  radius over  $A = \pi r^2$ . Already any closed curve must be circle at the end if there is motion. Namely, if you take center of gravity for closed curves as a reference, it becomes  $|F_{p+x}r_{+x} - F_{p-x}r_{-x}| > 0$  in absolute value where  $r_{+x} \neq r_{-x}$  and  $F_p$  is partial force applied on a line in the area; but it becomes  $|F_{p+x}r_{+x} - F_{p-x}r_{-x}| \approx 0$  in absolute value where  $r_{+x} = r_{-x}$  since the path for any force-applied is the same in circle as radius, and  $F_p$  is partial force applied on a line in the area. It is approximate 0 since there is actually time differences and thus actually for the same time also force magnitude or distance taken cannot be the same in different direction. As a result, it becomes  $|F_{p+x}r_{+x} - F_{p-x}r_{-x}| > |F_{p+x}r_{+x} - F_{p-x}r_{-x}|$  in absolute value. The difference in force in closed curves which are not circle also creates motion in accordance with the definition of force since it will be  $(F_1 - F_2)/t = v_F$  where  $t$  is time of change in force and  $v_F$  is its velocity or will be  $m_1 a_1 - m_2 a_2 = ma$ ; so they are stressed and they want to take themselves to lower energy state, and at the end, to minimum energy state for its any point since denser points has more energy; but as it was said, this creates motion.

Hence the other variation of  $\Delta l_1 = n\Delta l_2$  and thus of Eq. (8) as  $nA = E$  is impossible; because matter moves from the denser space to lower density naturally. Forcing it to denser space is also moving to lower density since still matter emerges at that time by moving to lower density in in-

ner space. Namely, natural characteristic of matter is not dependent on  $nA = E$  since for the fixed  $A$ , it is going to be  $\lim_{n \rightarrow \infty} E = \infty$ . It cannot allow emergence of motion.



**Fig. 4:** Polygon transformation being  $n$  is even number

Over Fig. 4, it becomes Eq. (9) where  $\alpha = 360/n$  and  $AB = d$ .

$$d^2 = 2E^2 - 2E^2 \cos(\alpha) \quad (9)$$

Also it becomes Eq. (10) over  $nd = 2\pi \sqrt{A/n}$  for the circumference of the circle where  $\pi r^2 = A$ .

$$d^2 = \frac{4\pi^2 A}{n^3} \quad (10)$$

If Eq. (9) and Eq. (10) are equalized to each other, then we get Eq. (11),

$$1 - \cos(\alpha) = \frac{2F}{r^2} \quad (11)$$

where  $\alpha = 360/n$  and  $nE = A$ ,  $E = Fr$ . Here assume that  $\cos(\alpha)$  is the sum of all possibilities of possible existence of  $F$  and  $r$  relatively to each other since  $\cos(\alpha)$  changes over  $\alpha = 360F/\pi r$ . Namely all possible  $F$  and  $r$  values are in this area for  $\int \cos(\alpha) dr$ . Also you can use  $\int (1 - \cos(\alpha)) dr$  as an option. For  $\int \cos(\alpha) dr$ , we have Eq. (12),

$$1 = \frac{360x}{\pi} Si\left(\frac{360x}{\pi y}\right) + y \cos\left(\frac{360x}{\pi y}\right) \quad (12)$$

where  $x = F$  and  $y = r$ . Do not think the functions allow  $n = \infty$ ; because it creates infinite probabilities. In the exact opposite way, matter is uncertain as convergent. Namely  $n$  has an end. Otherwise matter would not be created since  $E$  is going to become 0; so for the calculation  $\pi$  is going to be a decimal number for required approximation.

For this equation,  $F$  is not continuous on  $x$  axis. It becomes 0 by some periods. At the point of  $x = F = 0$ ,  $y = r$  becomes 1. It means  $F$  does a circular motion and changes dimension that otherwise nothing can be calculated since all formulas are going to be 0. Already  $F = 0$  is estimated result since we cannot know both of them at the same moment together, as it was proven above over derivative components.

For the second option, over  $\int 1 - \cos(\alpha) dr = \int \frac{2F}{r^2} dr$ , it becomes Eq. (13),

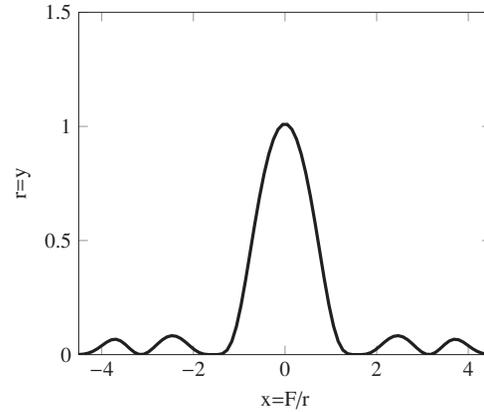
$$y = \frac{\frac{180xy}{\pi} Si\left(\frac{360x}{\pi y}\right)}{1 - \cos\left(\frac{360xy}{\pi y}\right)} \quad (13)$$

where  $x = F/r$  and  $r = y$ . Since is  $y = f(x, y)$ , do not make a simplification for  $y$  and accept it as  $f(x, y) = 1$ ; so it turns

into Eq. (14).

$$y = \frac{\pi \left( -1 + \cos\left(\frac{360x}{\pi}\right) \right)}{180x Si\left(\frac{360x}{\pi}\right)} \quad (14)$$

For this equation, both force and distance become zero now and again it means, there is a circular motion and dimensional change. Already because of the time differences, there cannot be a middle point as also was proven at the beginning; so for any force-applied, a circular motion emerges.



**Fig. 5:** Representation of change in existence of force and distance. The graph is not identical. It is only similar.

## 5 Conclusion

These show us again, that the phenomena is also chaotic, emerges in an interval but in many different kind. Chaos is a perfect principle, and is a law according to me and my findings.

Also it seems entropy is an absolute law. Any measurable physical value of matter is uncertain. Even for after the comma which means in small amounts, between two different times, there must be an evaporation or in the other name vibration decrease since free space has resistance, and it is recovered since there will be friction or collision by different magnitudes as non-flexible; so repeat and thus frequency required to keep matter standing. A work is constantly done even in each small time. Matter is sum of many frames.

As you can see over the above stated derivative components,  $dx$ ,  $dy$ ,  $dz$  are the smallest 3D derivative components of an unknown function whatever the function is; so as matter basically works over the same principle, namely if that components were for speed, distance, force or time by changing functions since the rule is going to be the same, for example if you knew  $t$  as the same for any component during measuring distance over  $x = vt$ , then  $v$  would be different. If you knew  $v$ , then  $t$  would be different. As also there is time differences, a motion is only able to emerge over arcs since there is no middle point for any force applied; so additionally if you know  $t$ ,  $v$  becomes uncertain because of emerging irrationality; so in the exact opposite way of the wave function, even if you measure any physical value at different times even for different phenomenon, there is going to be no intersection point. You may get closer but equation. As a result, 3D position or for example 3D mass cannot be detected certainly if you know for example time. Even you cannot detect the other component if you know one of them. Namely, the uncertainty is not

limited by momentum and destination. It is also valid for example between mass and destination or time and distance. As a result for like-this relations, you must relate them by both inequality and uncertainty like Heisenberg did. Also you can write your own with coordinate system.

This is like the rule of circle. If you take the circumference as integer, then you make the radius uncertain as irrational. If you take the radius as integer, then the circumference becomes uncertain because of the relation between area and length of the circle.

Hence entropy also increases as long as there is motion. If you assume that there are infinite universes then the total energy of the universe which is done to create it against space resistance must be provided by another universe or energy source. It means between two energy, there is an energy transfer. While our universe is emerging, the source loses energy, and when our universe lost, the energy stored again by the source; but as you can see this is not different then the energy transfer in our universe during creation or after creation. Namely, if there is a transfer, there is going to be vibration decrease and extra energy need. It means, the source is consumed by  $mc^2$  each second because of both on-space entropy which emerge during constantly creation repeat of universe and the entropy which is equal to existence of matter since the work-done is done against extinguishedness of matter. It means our universe consuming many universes, as the other universes consume many other that also source universes need energy from other one, then where is the extra energy provided from. Our universe also must be source of another one.

If you think there are limited universes that the number can be like  $10^{10000}$ , as infinity can never work since anything is element of it namely there is no energy change in infinite energy, these universes would spend  $mc^2$  even in infinite sum. Namely energy spent by these universes for 1 second is equal to infinite period of their life time spending. As a result there cannot exist infinite universes at the same time with infinite transfer. Infinite transfer amount means emergence from nothingness constantly each second since requires infinite energy decrease to 0 and then increase from 0. This is non-sense. Already it cannot be over time. It happens untimely manner and first time creation is not possible.

Already as you can see, there is no constant speed due to the components. It also means there is acceleration or deceleration. Acceleration is only possible from zero point that is not possible; but deceleration is possible from infinite, absolute energy, and emerging things are its virtual parts with frequency. There is an imaginary time point that I proved it mathematically [1]. There are imaginary time, motion and energy.

We should develop a new wave function over conservation of area and thus of energy. Even we should include appearance from imaginary time which I discovered that you can check it over the rule of the triangle which proves impossibility of perpendicularity, and seems also Riemann surfaces are dominant in universe. Complex analysis is required.

The classic wave function which is based on Gaussian normal distribution allows even infinite universes or for example taking place at infinite distance. Actually these must be between some intervals. Namely if you have a probability detector, and if you take place at Mars, for an electron which is placed at the world somewhere, the probability will increase as long as you get closer to the world. If you take place at Jupiter, just the amount changes but again converges as long as you move towards the world; but you cannot take place at somewhere beyond the universe itself since the area can only hold limited energy. The probability is limited. There are some paradox. Instead of it, ratio of each probability increases and cannot be certain or 1 none of them alone; but can

be 0 and this is paradox of physical laws. In a limited interval there are infinite probabilities, times, and this is dependent of irreversibility of entropy and thus single way of time. In the same manner, the place which the electron takes place cannot be 0. As a result, a function to use for probability calculations, it cannot be integrated to infinity and from negative infinite.

I am going to work about these. If you find this short work helpful, also you should in the name of perfection of our abilities and information.

## References

1. Kavak M. 2018, Complementary Inferences on Theoretical Physics and Mathematics, OSF Preprints, Available online: <https://osf.io/tw52w/>