For quantum space geometry

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Abstract:

Quantum mechanics and relativity theories are the two powerful tools to study the properties of universe and its functions. These two theories have been experimentally verified. But when we apply the predictions of general relativity to quantum physics we have to face serious draw backs and notice that Einstein's gravitational theory is incompatible with the rules of quantum mechanics. Richard Feynman put it correctly that it is highly impossible to explain quantum reality in terms of Newtonian mechanics which is a special case of general relativity. It is well known that Einstein's general relativity is the geometrical interpretation of gravity. Einstein applied the basics of non – Euclidean geometries to formulate general relativity***." To this interpretation of geometry, I attach great importance, for should I have not been acquainted with it, I never would have been able to develop the theory of relativity. " Einstein.*** The reason for this is that there is no proper geometrical interpretation of quantum theory. To fill this gab, the author proposes a new concept for quantum space geometry.

Keywords: Euclidean Postulates; Non -Euclidean Geometries ; Quantum physics

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Construction: Let ABC be the given triangle. On BC take two points D and E. Join A and D. Join A and E. Let x, y and zdenote the sum of the interior angles of triangles ABD, ADE and AEC respectively. Also let that a, b, and d respectively refer to the sum of the interior angles in triangles ABE, ADC and ABC.

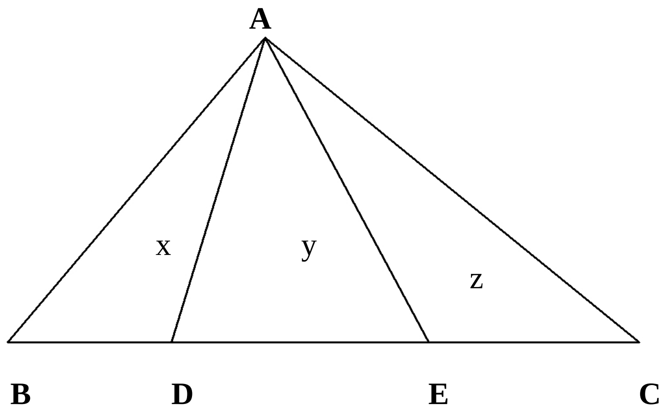

Figure 1 (Euclidean)

Results:

Since the angles BDE and DEC are right angles their measures are equal to 180^0 .

Let v be the value of this 180^0 (1)

Assuming (1) and adding, $x = y = v + a$ (2)

$y + z = v + c$ (3)

$a + z = v + d$ (4)

$x + b = v + d$ (5)

$x + y + z = 2v + d$ (6)

Squaring (4) , $a^2 + z^2 + 2az = v^2 + d^2 + 2vd$ (4a)

Squaring (3) , $v^2 + b^2 + 2vab = y^2 + z^2 + 2yz$ (3a)

Squaring (2) , $x^2 + y^2 + 2xy = v^2 + a^2 + 2va$ (2a)

Squaring (5) , $v^2 + d^2 + 2vd = x^2 + b^2 + 2xb$ (5a)

Adding (3a) and (4a) we get that,

$a^2 + 2az + b^2 + 2vb = d^2 + 2vd + y^2 + 2yz$ (7)

Adding (2a) and (5a) we have ,

$y^2 + 2xy + d^2 + 2vd = a^2 + 2va + b^2 + 2xb$ (8)

(7) – (8) gives, $a^2 - y^2 + b^2 - d^2 + 2v (b - d) + 2az - 2xy =$

$d^2 - a^2 + y^2 - b^2 + 2v (d - a) + 2yz - 2xb$

i.e (a + b) 2 – 2ab – (y + d) 2 + 2yd + 2v (b – d) + 2az – 2xy =

(y + d) 2 – 2yd – (a + b) 2 + 2ab + 2v (d – a) + 2yz – 2xb (9)

Adding (2) & (3) and using (6) we obtain that $y + d = a + b$ (10)

Putting (10) in both LHS & RHS of (9) ,

$yd - ab + v (b - d) + az - xy = ab - yd + v (d - a) + yz - xb$

i. e $2yd - 2ab + v (b - d) + a (z - b) + y (d - x) - v (d - a) - yz + xb = 0$

i. e $2yd - 2ab + v (b - d + a - d) + a (z - b) + y (d - x) - yz + xb = 0$

Applying (10) in the third factor
,
$2yd - 2ab + v (y - d) + a (z - b) + y (d - x) - yz + xb = 0$

i. e $2yd - 2ab - vd + a (z - b) + y (d - x + v) - yz + xb = 0$

Assuming (5) in the fifth factor ,

$2yd - 2ab - vd + a (z - b) + yb - yz + xb = 0$

i. e $2yd - 2ab - vd + yb + b(x - a) + z(a - y) = 0$ (11)

From (2) we have $x - a = v - y$ (2b)

From (2) we have , $a - y = x - v$ (2c)

Applying (2b & (2c) in (11) we get ,

$2yd - 2ab - vd + yb + b(v - y) + z(x - v) = 0$

Simplifying and re-arranging ,

$2yd - 2ab + v(b - d) + z(x - v) = 0$ (12)

From (5) we have , $x - v = d - b$

Putting the above relation in (12),

$2yd - 2ab + v(b - d) + z(d - b) = 0$

i. e $2yd - 2ab + (b - d)[v - z] = 0$

i. e $b[v - z - 2a] + d[2y - v + z] = 0$

Putting (3) in the second factor,

$b[v - z - 2a] + d[y + b] = 0$

i. e $b[v - z - 2a + d] + yd = 0$

Assuming (4) in the first factor, $yd = ab = 0$

i. e $y / b = a / d$ (13)

By using the famous algebraic equation, if $a/b = c/d$, then a – b / b = c – d m/ d in (13) we obtain that ,

y – b / b = a – d / d (13a)

From (10) we have y – b = a – d (10a)

Analyzing (10a) and (13a) we obtain the numerators

LHS and RHS of (13a) are equal.

So we get that b = d (13b)

Putting (13b) in (5) we obtain that x = v (5d)

Comparing (1) , (5d) and x we get that the angle sums of triangle

ABD is equal to two right angles (14)

Discussion

Needless to say, (14) is a contradiction.[2] & [2] But the eqns .(1) to (14) are consistent. We have only applied the fundamental operations of number theory and the basic rules of algebra. Also , we have NOT introduced any new hypothesis or lemmas. So, this is the apt time to probe in to further for the origin of new non Euclidean geometry. When Lobachevsky in 1829 and Riemann in 1854 published their ground breaking non Euclidean results the research community did NOT agree with them and their beautiful inventions were ignored. After 86 years of Lobachevsky's publication and after 61 years of Riemann's publication, Einstein gave recognition and concrete consistencies for both the non Euclidean geometries by successfully incorporating these non Euclidean conceptions in his relativity theories. That's why Einstein said: ***"Great spirits have often encountered violent opposition from weak minds."*** After his publication in 1854 , Riemann concluded that it would be for physicists to further probe this invention. Recalling this , I also appeal to the physics community to investigate this and find a way for the creation of quantum space geometry.

"Every boy in the streets of Göttingen understands more about four-dimensional geometry than Einstein. Yet, in spite of that, Einstein did the work and not the mathematician." Hilbert

“It is now possible to appreciate how much of science has become mathematized in the form of geometry. Since the days of Euclid the laws of physical space had been no more than theorems of this geometry. Hipparchus, Ptolemy, Copernicus, and Kepler summarized the motions of the heavenly bodies in geometrical terms. With his telescope Galileo extended the application of geometry to infinite space and to many millions of heavenly bodies. When Lobatchevsky, Bolyai, and Riemann showed us how to construct different geometrical worlds [non-Euclidian geometry], Einstein seized the idea in order to fit our physical world into a four-dimensional, mathematical one. Thereby gravity, time, and matter became, along with space, merely part of the structure of geometry. Thus the belief of the classical Greeks that reality can be best understood in terms of geometrical properties and the Renaissance doctrine of Descartes that the phenomena of matter and motion can be explained in terms of the geometry of space have received sweeping affirmation." Morris Kline [3]

References

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[3] Morris Kline, Mathematics and the Search for Knowledge

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