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# How can the Particles and Universe be Modeled as a Hollow Sphere

## I. Abstract

This theory proposes a theory of why the Universe and particles can be modeled as a hollow spheres but still not be a hollow sphere, but rather a sphere with very few discontinuities in relation to the spheres overall size. It also proposes why a diameter can be different when calculation a charge radius or energy radius or mass radius and why the spheres in this theory must be rotating.

## II. Calculations

This theory begins with the assumption that the Universe is a spinning sphere made of spinning spheres. Also the neutron, proton, electron, light etc are spinning spheres made of spinning spheres. Indeed, the spinning spheres never change location, but rather the change in the spin is what is translated from place to place. In the case of matter, the change in spin is translated, as well as the discontinuity is translated from one place to another.

The easiest way to pack spheres, in an efficient method is to pack in a cuboctahedron structure. However, with gravity, there is a tiny force that causes each sphere to a center and thus results in a thin spherical layers of packing. The problem with thin spherical shell packing is that each next larger thin spherical shell has more spheres than the interior sphere. For example, a sphere as shown below, looks like it has a radius of about four smaller spheres. This would yield an outer surface of 64*pi spheres. The next layer would have a radius of 5 resulting in 100 pi spheres. This creates some discontinuity in the packing. When starting from the first few layers, the concentration of discontinuities is high. As one works out to a very large radius, the percentage of discontinuities drops dramatically. How does one add up the discontinuities? After the image this is explained easily.

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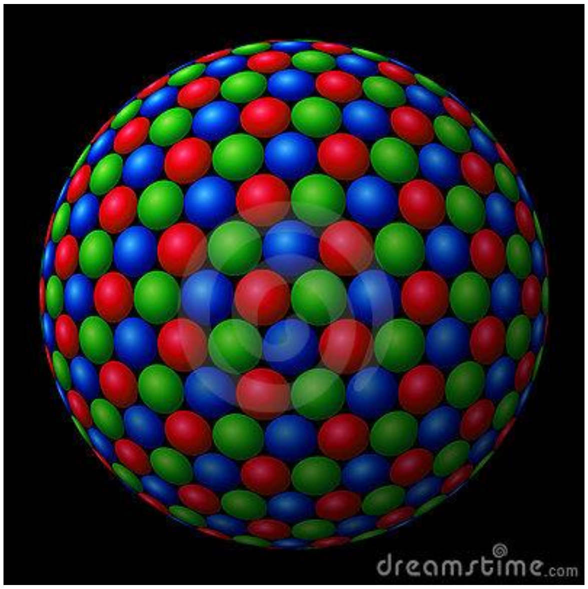


Further imagine attempting to place another layer of spheres around this sphere. Initially, the inner spheres have a high percentage of discontinuities, but when one gets to the billionith, billionith, billionith layer, the percentage of discontinuities get very small. How does one figure out the amount of discontinuities? A simple integration can solve this problem! Each layer has $4*\pi*x^2$ . So if we use the Equation 3, below, we can find out the total amount of discontinuities. Discontinuities between layers would be

$$Discontinuitiesbetweenadjacentlayers = 4pi*(x+1)^2 - 4pi*x^2$$

If we integrate this from 0 to x

Let Sd= Sum of Discontinuities between adjacent layers of concentrically packed sphere made of spheres

$$Sd = \int_0^x 4pi*(x+1)^2 - 4pi*x^2 dx$$

We obtain

Equation 3 $Sd = 4pi(x^2 + x)$

Please note that, as x becomes very large, only $x^2$ dwarfs $x$

And then the equation becomes

Equation 4 $Sd = 4pi(x^2)$

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**Note that equation 4 is the equation for the outer surface area of a sphere and note that all the discontinuities of packing sphere upon sphere in a spherical fashion, all adds up to the surface area of the outer layer of spheres, even though all the discontinuities are distributed throughout the sphere.**

Now lets say that the sphere is spinning. The velocity of all points within the sphere is some fraction of the radius of the larger sphere. Therefore, if one were to add up the momentum, charge, energy, and acceleration of the sphere as a whole the sphere could look different depending on what one was measuring. One could have a momentum radius, a charge radius, an energy radius, and an acceleration radius.

It can be shown that the momentum radius, charge radius, and acceleration radius is 2/3 of actual radius, and the energy radius is ½ of the actual radius.

## III. Conclusion

The model above of a sphere made of spheres shows how a solid sphere can be modeled as a hollow sphere, when it is the discontinuities of trying to pack concentric layers of spheres. In the case of the universe the amount of discontinuities ends up being on the order of $10^{41}$. The calculation is where the value of $x = N = 6.57943*10^{40}$ where N is determined by the equation 3 $N = 2\pi^3 hc / G(Mn)^2$ (1) from "Discrete Calculations of Charge and Gravity with Planck Spinning Spheres and Kaluza Spinning Spheres"

## Appendix A

## Fundamental Physical Constants

1. c=2.99792458 * 10 Exp 8 m/s
2. h=6.626 06957(33) x $10^{-34}$ J s
3. Mass of Neutron = Mn= 1.674 927 351(74) x $10^{-27}$ kg
4. Mass of Proton = Mp= 1.672 621 777(74) x $10^{-27}$ kg
5. Mass of Electron = Me = 9.109 382 91(40) x $10^{-31}$ kg.
6. G= 6.67384(80) x $10^{-11}$ $m^3$ $kg^{-1}$ $s^{-2}$

References

1) http://vixra.org/pdf/1403.0502v5.pdf

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