Cosmos mathematical model based on Pi.

URA, UMMA, atomic radii, atomic density.

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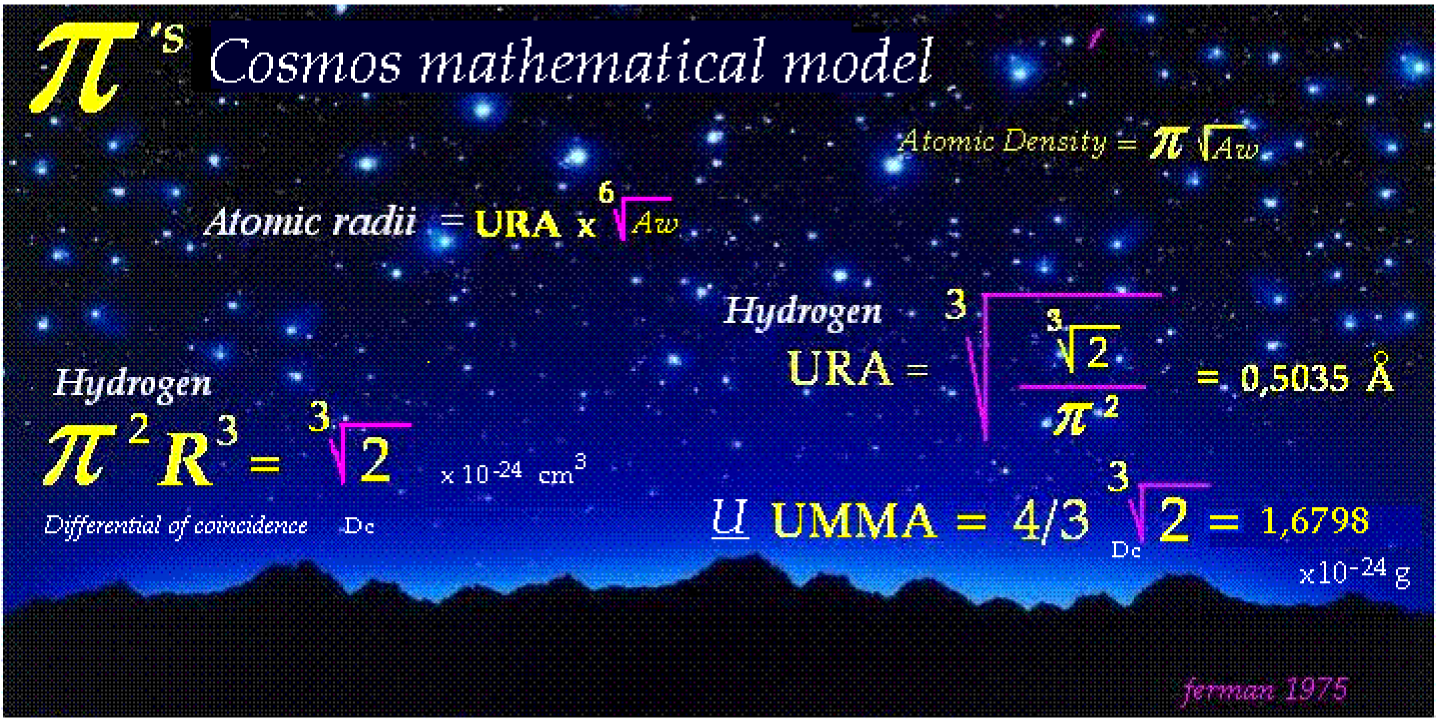
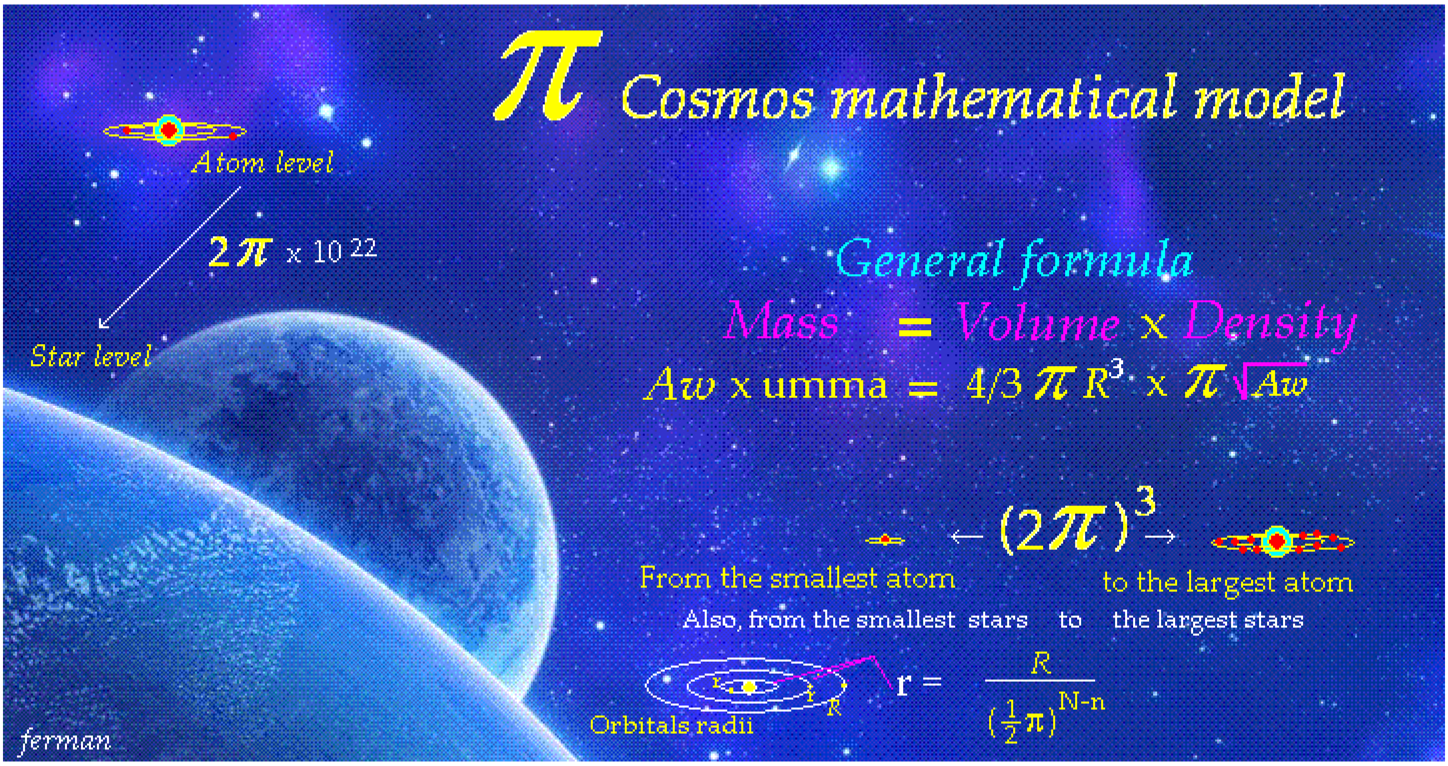


Aw Atomic Weight URA Unit of atomic radius UMMA Mathematical unit of atomic mass



During these last 40 years of my dedication to the cosmology mainly, and with the development of mi cosmic and atomic model, I was getting to the conclusion that the mathematical structure and architecture of the Cosmos is based mainly in the number Pi with opportune relation with the number 2, that to bi-dimensional level (area) it uses the form 2^1/2 (square root of 2) and to tridimensional forma it uses the form 2^1/3 (cube root of 2).

* Inclusive Pi has direct relation with 2, when it is possible obtain Pi by means of powers and roots starting from the number 2.
This idea was seem to be confirmed (and to be useful) when observing that due to the coincidence and approach of our decimal metric unit with the atomic measures, we could use Pi and the cube root of 2 for making structural formulas for atoms.
And some of these formulas are the ones expressed in these drawings.

Atomic density

Atomic density $D = \pi \sqrt{Aw}$ ferman

At first, we can look at the atomic density,

D = Pi x Aw^1/2

- Where Aw is the atomic weight of the element to be considered.

At the beginning and measuring the dimension of the hydrogen atom I observed that if we adjust the atomic volume (4/3 Pi R^3 = 0,53467 x 10^-24 cm^3) y later the result is multiplied by the number Pi, this product gives us approximately the unit of atomic mass (proton mass).
0,53467 x 10^-24 cm^3 x 3,14159 = 1,6797 x 10^-24 g.
Later on, I proceeded to make the same operation with other chemical elements, getting the conclusion that when the square root of the atomic weights was included, the formula also gave me the atomic mass of these elements.
This way, I established the general formula that can be seen in the drawing, in which the atomic density of each element is given multiplying the number Pi by the square root of its atomic weight.
Da = Pi x Aw^1/2

General formula

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General formula $Aw \times \text{UMMA} = 4/3\, \pi\, R^3 \times \pi \sqrt{Aw}$

As I said before, and following the physical formulas, the mass of one element is obtained multiplying its volume by its density. M = V x D.
On the other hand, we know the mass of any element is equal to its atomic weight by the unit of atomic mass M = Aw x amu.
So, from here we can draw the general formula in which we can include the atomic density, already expressed.

General formula:

Mass = volumen x density
Pa x amu = 4/3 Pi R^3 x Pi.Aw^1/2

And from this formula we can draw any other parameter, as the atomic radius of any element; the atomic mass unit, etc.
And so, we can draw also the atomic radius of hydrogen which, and as later on we see, it will be converted into the unit of atomic radius URA, very useful for obtaining the radii of the other elements in a simple form.

URA, unit of atomic radius

From the general formula before seen, we can draw the radius of the hydrogen atom, which will be converted into the unit of atomic radius URA, equal to 0,503523 x 10^-8 cm.
This unit of atomic radius URA is an interesting parameter, because the same than the unit of atomic mass, the URA can be used for finding the atomic radii of the other elements.
The formula that gives us these radii (R = URA x Aw^1/6) is getting multiplying the unit of atomic radius URA by de sixth root of the atomic weight of the different elements.
For example, and for the uranium R = 0,503523 x 2,49 = 1,2537 x 10^-8 cm.

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$$\text{Atomic radii } R = \text{URA} \times \sqrt[6]{Aw}$$

R = URA x Aw^1/6

Differential of coincidence

A discovery (important for me) was when operating with these formulas I found an interesting coincidence or approximation:
If we look at the general formula, and for the hydrogen atom where the atomic weight is 1 and also its square root is also 1:

1 x amu = 4/3 Pi R^3 x Pi x 1 ------- amu = 4/3 Pi^2 x R^3

In this circumstance we can observe that:

Pi^2 x R^3 = 1,2599, that is approximately the cube root of 2 ----- Pi^2 x R^3 = 2^1/3

This way, here we can substitute the parameters Pi^2 x R^3 in the hydrogen atom by the simple and easy operation of cube root of 2, --- (2^1/3).
And this is very important because we have got the reduction a simples mathematical operations the general formula for the atomic dimensions.

UMMA, Mathematical unit of atomic mass

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$$\text{Mathematical Unit of atomic mass } \quad UMMA = 4/3 \sqrt[3]{2} = 1{,}6798 \times 10^{-24} \text{ gm.}$$

Using the simplification that gives us the differential of coincidence, Pi^2 x R^3 = 2^1/3, and applying it to the hydrogen atom, we can establish a unit of atomic mass UMMA totally mathematical, which will be:

UMMA = 4/3 x 2^1/3 = 1,6798 x 10^-24 g.

URA, using the differential of coincidence

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$$\text{Unit of atomic radius } URA = \sqrt[3]{\frac{\sqrt[3]{2}}{\pi^2}} = 0{,}503523 \times 10^{-8} \text{ cm.}$$

Equally, we can obtain the URA (unit of atomic radius) using the differential of coincidence.

$$URA^3 = (2^{1/3}) / Pi^2 = 0,12766$$
$$URA = 0,12766^{1/3} = 0,5035$$

Besides the explained data, many other coincidences and applications of the number Pi exist in the Cosmos' structure; some of them are exposed in the initial drawings and other ones in my atomic model.