DIMENSION OF OUR UNIVERSE

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Abstract
Introduction: Due to the limitation of instruments our observable universe is very small compare to the actual universe. Here I made some assumptions which can explain the cosmological red shift and dark energy.

Keywords:[Massive centre , Extreme Object, Galaxy, Great Attractor, linear velocity of rotation, density]

Assumptions:

1. Our Universe has some massive centre and all objects in our Universe move around it.
2. There are some similarities between the structure of universe and the structure of Atom. M/r ratio of atom is of the order of 10^-21(in S.I unit).
   So, I predict that M/R for universe is less than equal to 10^-21.
3. Like atom , combine mass of all other objects (except that centre) of our Universe is negligible compare to the mass of that centre.
   [logic behind assumption 3

   Mass of earth>> Mass of moon
   Mass of sun>> combine mass of all objects in our solar system

   Mass of centre object in galaxy>>Mass of all other objects in that galaxy[1]]

   Now , we try to find the rotational velocity of extreme distance object in its orbit about that massive centre.
   Let M is the mass of the massive centre and R is the distance of the object from the massive centre and m is the mass of the object. If v is the velocity of the object then

   (Mv^2/R) = (GMm/R^2)
   Or, v^2 =G.(M/R)
   Or, v^2 =(6.67×10^-11)×10^-21 [as M/R< 10^-20, assume]
   V^2=6.67×10^-31 …………………………………………………..(1)

   This velocity results from assumption.
   Now, I try to find the actual velocity by using this result in visible universe data.

   From the data of visible universe , the galaxy in our neighbourhood rushing rusing at a speed 10^6 m/s=v(a) , v(a) is the actual velocity[2].it rotated about the region which is called great attractor.the distance of galaxy from the great attractor is 10^21 mtr=R(a).the mass of the great attractor 10^47 kg=M(a).
   Now form newton's law of gravity (M/Rv^2) = 1/G= constant.
   G is the gravitational constant. In S.I unit order of G is 10^-11

   ⇨ (M/Rv^2)=(M(a)/R(a)v(a)^2)
   ⇨ V^2=(M/R)*(R(a)/M(a))*v(a)^2
   ⇨ V^2=10^-20*(6*10^21/10^47)*10^12
   ⇨ V^2=6*10^-35………………………………………………………………….(2)

   This is the corrected result for velocity of extreme object which nearly equal to valu of v from assumption.
   Here, M is the mass of centre object of our universe, R is the distance of extreme object from the centre object and v is the linear velicity of rotation of extreme object .

   Now we try to establish the relation between density and dimension of universe.
   Density of earth system is 0.1 kg/ m^3
   Earth system means that earth along with moon
   Density of solar system 1.98*10^-15 kg/m^3 (dimension r=10^15 mtr)[3]
   i.e order of density d=1/r in S.I system for solar system
   density of observable universe is 9.9*10^-27 kg/m^3 (dimension r=10^27 mtr)[4]
   i.e for observable universe order of density d=1/r
   so, form these data it is clear that there is inverse relation between density and dimension.
   Let I consider that for our whole universe d=1/R^x
   So, mass of the universe is M= R^3*(1/R^x)
   Here I neglect the constant, as order is important here.
   => M=R^(3-x)
   Now ,v= (GM/R)^(1/2)

$V^2=GM/R$

⇨ $V^2=GR^{(2-x)}$

Putting the values of V and G we get

⇨ $10^{-36}=10^{-11}*R^{(2-x)}$

⇨ $R^{(2-x)}=10^{-25}$……………………………………………………………(3)

⇨ $(x-2)=25\ln10/\ln R$

⇨ $(x-2)\rightarrow 0$ but not equal to zero (as R is very large)

⇨ $(x-2)=\text{€}$ where € is very small number

⇨ $X=2+\text{€}$…………………………………………………………………….(4)

So, using equation (3) and equation (4)

$R^{\{2-(2+x)\}}=10^{-25}$

⇨ $R^{\text{€}}=10^{25}$……………………………………………………………….(5)

⇨ $\text{€}= 25\ln10/R$

Now for visible universe $R\rightarrow 10^{17}$

⇨ For actual universe $R>>10^{17}$

⇨ $\text{€}<10^{-17}$……………………………………………………………..(6)

Now, using equation (5) and (6)

$(R)^{(10^{-17})}=10^{25}$

=> $R>\exp\{(10^{17})*25\ln10\}$mtr

=> $R>\exp(10^{17})$ mtr

So,our universe is not infinite but much much larger than obsrvabale universe.

Conclusions: according to these assumptions , universe has very massive centre . Total mass of all other object in universe(except the mass of that centre)is negligible compare to the mass of that centre.It may possible that our visible universe is close to this centre(this closeness distance is vastly greater than the size of visible universe). Due to the gravitation pull of this massive centre , our visible universe contract towards the centre. Due to contraction the distance decreases as a result contraction speed increases with time. Due to this contraction all objects in our visible universe go far away from each other. When a body fall on black hole , it break into several part and the distance between these part gradually increase.

References:

[1] Galaxy rotation curves of a Galatic Mass Distribution By Camiel Pieterse and supervise by dr. Wim Beenakker Theoritical High Energy Physics.

[2] https://hypertextbook.com/facts/1999/PatriciaKong.shtml

[3] http://zombal.com/zomb/scientific-calculation/calculate-the-average-density-of-the-solar-system/

[4] arXiv.org>astro-ph>arXiv-ph/9709219, Cornell university library