

## Rotation period of maximum theoretical estimated our galaxy

Summarize:

The maximum theoretical period of rotation of our sun around our galaxy is estimated at 145 million years and to increase this estimate should decrease the density estimated from our galaxy, [which means to make the argument that there are more dark matter than ordinary matter \(baryonic\) in our galaxy](#), we must further reduce the estimate of the density.

Proof:

For an object with a small mass that rotates around an object with a mass  $M$  much greater in an orbit of radius  $R$ , the period squared  $T$  Kepler is:

$$T^2 = [(4/G)(\pi)^2](R^3)[1/M] , (\text{équation 1}),$$

For the mass  $M$  with such a low density at the point where its radius is  $R$ ,  
 $M = d[4(\pi)/3](R^3)$  and Equation 1 becomes:

$$T^2 = [3(\pi)/G](1/d) , (\text{sphere of uniform density}), (\text{Equation 2}),$$

Equation 2 is for a sphere of uniform density, but for a disc of uniform density  
Equation 2 becomes:

$$T^2 = [(2(\pi)/G)(1/d) , (\text{équation 3}), (\text{disk of uniform density}), (\text{Equation 3}),$$

For equation 3 I use the Gauss theorem applied to the gravity of a disk  
of uniform density and mass  $M$  and radius  $R$ , just then do the following:

$$M = (\text{constant})[\int]E(ds) , (\text{équation 4}), (\text{Equation 4}),$$

$[\int]$  is to describe an integration, or an amount as gives the field  $E$   
gravitationnel en  $N/Kg$  and that it is constant, then equation 4 becomes:

$$M = (\text{constant})E[\int](ds) , (\text{équation 5}), (\text{Equation 5}),$$

as  $[\int](ds)$  represents an area equal to:

$$[\int](ds) = 2(\pi)R(\text{thickness}) , (\text{équation 6}),$$

on a: according to Equation 6 and Equation 5, we have:

$$M = (\text{constant})E[2(\pi)R(\text{thickness})] , (\text{équation 7}),$$

for a disk of uniform density and radius  $R$ , mass  $M$  equal to:

$$M = d[(\pi)R^2](\text{thickness}), (\text{équation 8}),$$

on a: according to Equation 8 and Equation 7, we have:

$$M = d[(\pi)R^2](\text{thickness}) = (\text{constant})E[2(\pi)R(\text{thickness})],$$

$$dR = 2(\text{constant})E, \text{ (équation 9),}$$

if  $V$  is the velocity at a distance  $R$ , the field is  $E(V^2)/R$ , because the field  $E$  is expressed in  $N/Kg$

and the centripetal force per unit mass which is also in  $N/kg$  is  $(V^2)/R$ , then:

$$E = (V^2)/R, \text{ (équation 10),}$$

on a: according to Equation 10 and Equation 9, we have:

$$dR = 2(\text{constant})[(V^2)/R], \text{ (équation 11),}$$

to find the constant (constant), it suffices to apply the theorem of Gauss to gravitation to a planet with a mass  $M$  and uniform density with radius  $R$ , this gives:

$$M = (\text{constant})[\int E(ds)],$$

$$M = (\text{constant})E[4(\pi)R^2],$$

$$M/[(\text{constant})4(\pi)R^2] = E, \text{ (équation 12),}$$

Here  $E$  is the gravitational field in  $N/kg$  and equal:

$$E = GM/(R^2), \text{ (équation 13),}$$

according to Equation 13 and Equation 12, we have:

$$M/[(\text{constant})4(\pi)R^2] = GM/(R^2), \text{ (équation 14),}$$

simplifying the equation 14 and isolating the constant (constant) we get:

$$(\text{constant}) = 1/[4(\pi)G], \text{ (équation 15),}$$

Equation 11 is:

$$dR = 2(\text{constant})[(V^2)/R], \text{ (équation 11),}$$

on a: according to Equation 15 and Equation 11, we have:

$$dR = 2[1/4(\pi)G][(V^2)/R], \text{ (équation 16),}$$

$$V = 2(\pi)R/T, \text{ (équation 17),}$$

according to Equation 17 and Equation 16, we have:

$$dR = 2[1/4(\pi)G][4(\pi)^2][(R^2)/R][1/(T^2)],$$

$$d = [2(\pi)/G][1/(T^2)],$$

$$T^2 = [2(\pi)/G](1/d), \text{ (équation 3),}$$

This demonstrates the equation 3,

according to The Encyclopedia of Science, estimated the density of our galaxy which is currently

.1 (Solar mass) per cubic parsec, which gives a density of:

---

$d = (6.76769) (10)^{-21}$  kg per cubic meter, this gives a value close to my Personal estimates based on the number of stars around the Sun there within 20 light years, estimated at 109 with 8 brown dwarf, about the equivalent of 110 stars for sphere of 40 light years in diameter, giving my estimation Personal:

$$d = 7.71117) (10)^{-21} \text{ kg per cubic meter (estimated personal),}$$

taking the density estimated by The Encyclopedia of Science, one obtains from equation 3:

$$T = (118,215) (10)^6 \text{ years} = (118,215) \text{ million years,}$$

to find the maximum value, this T should be multiplied by the square root of  $3/2$  which is:

$$(3/2)^{(1/2)} = 1.2247449,$$

this value is obtained by dividing equation 2 by equation 3 and taking the square root of this value, is as follows:

$$[(\text{équation 2})/(\text{équation 3})]^{(1/2)} = (3/2)^{(1/2)} = 1.2247449, (\text{équation 17}),$$

our period by multiplying the number estimated by the equation 17, we obtain the maximum as follows:

$$T (\text{maximum}) = (1.2247449) [(118,215) (10)^6 \text{ years}] = [(144,783) (10)^6] \text{ years}$$

approximately 145 million years, which is the rotation period for the maximum theoretical of our sun around our galaxy, by knowledge of the density of our galaxy, the true estimated value of between 118 million years and 145 million years, to obtain a value greater than 145 million years, should get an estimate lower current density known and recognized, [so that to make the argument that there are more dark matter in our galaxy that of ordinary matter \(baryonic\)](#), it would still reduce the estimate of the density currently known and recognized, so this argument abundant dark matter in our galaxy is not valid.