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Natural Philosophies and the Deduction of Presence of Dark Matter

Poojan Godbole
B.E., AISSMS, Pune University

Abstract :

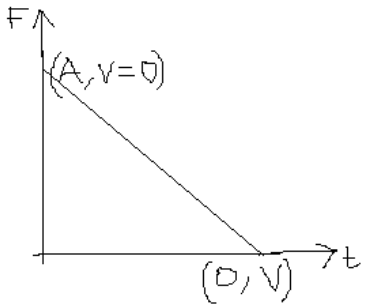
Here I have tried to derive a few equations for Energy and force for a body in space. It is assumed that there is a presence of dark matter in space, and Natural Philosophies 2, 3 , 4 tries to derive an equation using its existence. Finally I have inferred the presence and properties of dark matter using some of the experiments available over the net.

Natural Philosophy 1

Everybody in motion will continue its motion unless it meets an opposing force which changes its state. Why then this motion is limited to velocity and not accelerated motion.

It means that either space itself has a retarding potential which limits accelerated motion, or the body conserves this applied force and manifests itself as energy whenever it attains an inertial frame.

We have the standard equation of force as, $F = m^* a$, whenever a body is given an initial force, it seems very obvious to assume that acceleration should increase slowly until a maximum value and then slowly reduces down to a value of zero. Velocity also increases albeit not proportionally until it reaches a steady state value of V. Both follow a bell shaped curve. Here for simplicity sake and to derive the formula for Energy , I have considered a simple graph, where the slope of acceleration time graph is 45 degrees , initial acceleration is ‘A’ at the point of application of force and final acceleration is 0 after time period ‘T’.



We can write the modified equation of force as,

F = - m da/dt * T

F*dt = -mda * T

Integrating both the sides

$\int f * dt = -\int m\, da * T$

E = - m * [a] A→0 * T

So E = mAT

Here we get a positive symbol for energy showing that the energy is gained by the body in the process.

Thus the force applied is stored as the energy in the body in the form of potential energy. This energy can be manifested as the electromagnetic glow of the body.

Natural Philosophy 2

Now consider this body being acted upon by the retarding force of the dark matter. This retarding force will directly increase the mass of the body proportional to its velocity.

According to the classical as well as alternative derivation of Lorentz-Fitzgerald contraction (ref : "An alternative derivation of Lorentz-Fitzgerald contraction"):

m = mo/ $root$ ($1 - \frac{v^2}{c^2}$)

So retarding force

F = m* a

= mo/ $root$ ($1 - \frac{v^2}{c^2}$) * dv/dt

F * dt = mo dv/ $root$ ($1 - \frac{v^2}{c^2}$)

Integrating both the the sides:

E = mo integral dv/ $root$ ($1 - \frac{v^2}{c^2}$)

E = mo * c * asin(v/c)

So at zero velocities energy if zero and as velocity v approaches c or becomes even greater. We get

E = mo * c * π/2

So the maximum energy which we get would be π/2 * mo * c for any value of v greater than equal to c.

Natural Philosophy 3

There is a far larger quantity of dark matter than ordinary baryonic matter. Hence there will be dark matter percolating all of the universe, sometimes uniform , sometimes non-uniform. Now whenever a body is flowing through this dark matter it will experience a uniform force of retardation

Thinking slightly we can deduce that this force of retardation will be directly proportional to the density of the dark matter. So let us write.

F α ρ where ρ = density

F = k ρ where k is the constant of proportionality.

k = F/ ρ doing dimensional analysis …..

k = m * a / m/vol

k = a * vol

= m/s^2 * m^3

= m^2/s^2 * m^2

= v ^2 * Ar

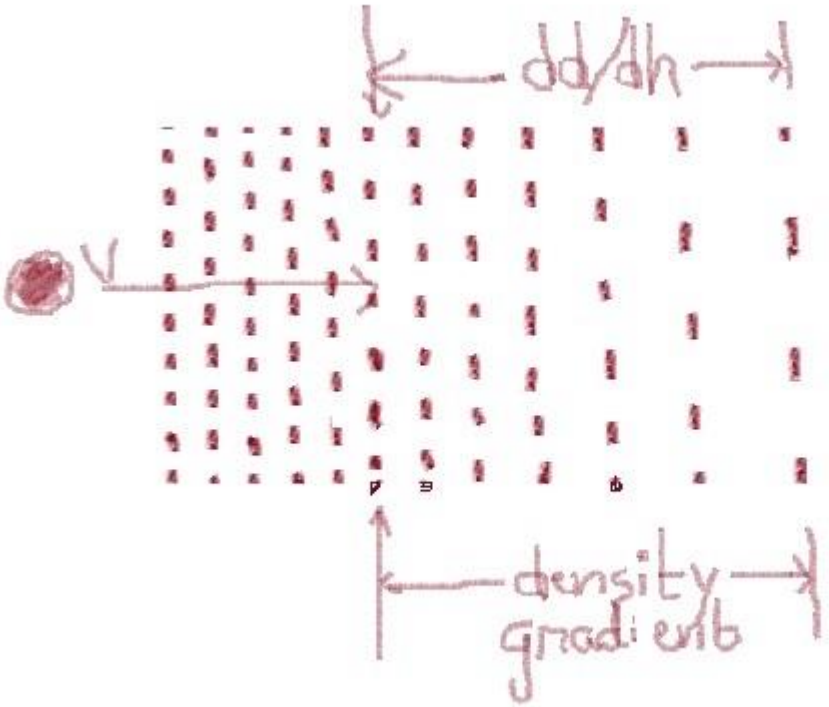
Or

$$F = v^2 * Ar * \rho$$

So we can see that the retarding force is directly proportional to square of initial velocity and the surface area of projection of the body. So higher the initial velocity and area of projection higher will be the force of retardation.

Natured Philosophy 4

Consider a body travelling through negative density gradient of dark matter.



Now because of the negative density gradient the body travelling with initial velocity V suddenly experiences acceleration and this acceleration will be directly proportional to the density gradient and inversely proportional to it own density as it will oppose its own motion, This acceleration then will be given as.

$a \alpha dd/dh * 1/D$

h = distance through which the body travels
dd/dh = density gradient of the surrounding through which the body travels and ,
D = Density of the body itself

Let,
$a = k\, dd/dh * 1/D$
Where k is the constant of proportionality

Units of K will be:-
$k = a \times dh/dd * D$

$K = m2/s2 = v^2$

$a = v^2 * dd/dh * 1/D$

So this acceleration will again be directly proportional to initial velocity of body squared times the density gradient of dark matter times inverse of density of the object.

A few examples to test the presense of dark matter and its properties

In the first example, space like environment was created by nasa on earth (ref : https://www.huffpost.com/entry/man-survives-life-threate_n_628162) . A man in a pressurised suit was introduced into a vaccum chamber, there were tubes pressurising his suit , but somehow they got cutoff. At that point he felt the saliva on his tongue bubbling and becoming hot , later he became unconscious.

If Dark matter opposes matter in free space then it can put pressure from all sides on matter , If the above mentioned chamber had been fully vacuumed, and the pressurised suit had become depressurized because of malfunction, then it is obvious that the only sensitive component it could put pressure on is the Saliva which is just inside the opening (mouth) , and then later on the blood and other sensitive fluids. this would in turn increase the temperature , making the saliva bubble.

The “MPemba effect" :
You can check out the second example by making snow with boiling water.
Here water is taken to just below boiling temperature and then thrown out in frigid atmosphere . The water instead of converting into snow , first evaporates, forms water vapour , and then gets converted into small particles of snow. You can see the funny yet spectacular effect all over tube , A few of the ref. links I have provided over here.

https://www.youtube.com/watch?v=c52RuIuETEc
https://www.youtube.com/watch?v=JS4oQbJ-L5k

It could be possible that because the water is taken to the boiling temperature , the individual water molecules become sparce and sensitive , hence dark matter can show its properties, putting pressure and increasing the temperature even further to cause vaporization . These water vapours can then readily be converted into snow because of the temperature of the environment.

Stars and their rotation in galaxies :

Third most visible effect can be shown by the rotation of stars in the galaxies. It is seen that the outer star's of a galaxy are rotating at a higher late than expected. Now higher the rate of rotation for outer stars, more likely they will be thrown out of the galaxy because of centrifugal force. But this does not happen, This effect can be summarized by the presence of extra dark matter surrounding the galaxy. It exerts a pushing force needed by the stars to rotate in faster orbits around the centre instead of flying off into space.

Conclusion : Here I have tried to derive the Energy and force on objects moving in space in the presence as well as absence of dark matter, and dark matter gradient.

It can be concluded from a few experiments the presence of dark matter. And analysing the experiments I have concluded that dark matter exerts a pressurizing force of ordinary matter.