Maximum Acceleration and Velocity

It is Tuesday May 26, 2015 and I was on my morning walk. I was thinking about calculating the maximum acceleration of gravity using a lead ball and the earth as a hemisphere. I had planned to so this when I was sure of the values of my two virtual constants. A surprising twist occurred to me. What if I used the acceleration values for this model over very long distances, say 100,000 kilometers down to I meter; and then calculated the velocity of the lead ball as it fell toward the hemisphere? What would the velocity be when it reached 1 meter?

Because the speed of the gravitational object is about the same as the speed of light (I determined this from the Wang Anomaly and the Allais Anomalies), I would expect the velocity of the lead ball to get close to the speed of light. I could use the values of the two terms to calculate the velocity of the lead ball and see if it is approaching the speed of light. This would be using Majorana's experiment to get the terms and the Hemisphere calculation to get the speed of gravity and show that they are somehow related to each other. Does such a relationship exist?

Because there is a maximum acceleration, there would be a maximum velocity. Newton's equation describes a force that increases with mass without limit. So it has an unlimited acceleration. This means that it is possible for the velocity of lead ball to exceed the speed of light. Newton's equation could allow the speed of an object to be greater than the speed of light. Since my equation has a limit, the velocity cannot exceed a maximum value, whatever that is.

I could also use this two body model to calculate the two terms of my equation by forcing the maximum velocity of the lead ball to be the speed of light.

Food for thought!

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It was early Sunday morning, May 31, and I was watching the news. But my mind was on the paper I wrote just a few days ago. Then it came to me. The instantaneous force of gravity in my equation could be dependent on velocity.

Faster Than light

In the above example, I could not see the connection between the Majorana experiment and the free fall of a lead ball to a massive object. And yet I expected the velocity of the falling lead ball to be limited to the speed of light or less. I was wrong! There is no connection between these two events that would limit the velocity.

If the lead ball has an initial velocity that is very high, then as it falls toward the massive object, its velocity will keep increasing. Because there is no force opposing the velocity, it could reach velocities greater than the speed of light. My equation continues to apply the full force. This force causes the object to continue to accelerate and there is nothing to slow it down.

Drag

A comet, moving in space, will continue to move at constant velocity and in a straight line as long as all forces are equal and opposite in all directions. This is Newton's first Principle. Newton's second Principle states that the acceleration of an object is proportional to the applied force. His use of the word applied is very important.

The force applied in a head on collision of with gravity can be higher than the applied force of a rear end collision. As the velocity of the comet increases, the head on collision increases the applied force (drag), while the rear end collision decreases the applied force. Newton's idea of applied force makes the force of gravity dependent of the speed of the object and the speed of gravity.

The Potential Force of Gravity

F_p is one of my virtual constants. Here is the equation for F_p:

$$F_p = PAf_i \tag{1}$$

The term f_i is the instantaneous force available for each path. But since the applied force f_a is dependent on velocity, the potential force per path will be designated as f_p. Equation 1 changes to:

$$F_p = PAf_p \tag{2}$$

The force of gravity that is in the same direction as the velocity of the moving object will decrease with increasing velocity while the force of gravity that opposes the direction of the moving object will increase with increasing velocity. So here are the two equations:

$$f_f = f_p\left(1 - (S_o/S_g)^n\right) \tag{3}$$
$$f_r = f_p(1 + (S_o/S_g)^n) \tag{4}$$

F_p is the available force defined in equation 2. Equation 3 f_f represents a force pushing the object in the same directions as the moving object. As the speed of the object S_o increases, the applied for decreases. When the speed of the object reaches the speed of gravity Sg, f_f is reduced to zero. Equation 4 f_r represents the retarding force causing the object to decelerate as the speed of the object increases.

Although these two equations meet the criteria of the end points, the actual data for this is not known. So, the ratio of S_o to S_g is raised to the power n. 'n' = 0 is not valid. 'n' = 1 could be true but seems to add too much drag. It is my personal opinion that n should be at least a value of 2.

Theta

When performing a calculation, the angle between the direction of movement of the object and the direction of the force, is designated as theta. To get the proper value of f_f and f_r, the cosine of theta is added to equation 3 and 4. Theta is not the same angle as the angles for P and A as used in the double summation of my equation.

In Space

When an object is moving at high speed in open space, the value of the net forward force (f_f-f_r) also known as drag is:

$$f_f - f_r = (-2\,(S_o/S_g)^n)f_p \tag{5}$$

If the object is at rest, the applied force is equal to the potential force per path. If the speed of the object increases, the drag increases, causing the object to slow down. If the object reaches the speed of gravity, the retarding force is twice the potential force. This is the case where the gravity object and the moving object are coming at each other at the same speed, and has a doubling effect.

Accelerating towards a Very Large Object

A lead ball that is in free fall towards a very large object will have less force coming from the very large object. In this case the very large object is one where all the available forces passing through the object are used up. So, when the lead ball reaches the surface of this very large object, the retarding force is zero. With no retarding force, the only force left is the one pushing the lead ball towards the very large object.

However, its increase in speed will cause the force in the forward direction to reduce until the object reaches the speed of gravity. At this point there would be no applied force and therefore the velocity would not increase. So, what is the final velocity of the lead ball? The possibility of measuring a real event like this is very unlikely. So, it cannot be proved.

But a calculation can be done. Adding equations 3 and 4 to my equation for gravity will allow me to calculate the rate of acceleration for a lead ball in free fall towards a very large object. Hence the speed of the object can be determined and should show that the speed will not exceed the speed of gravity.

In most cases the velocity of the object is so slow that the effect of drag can be ignored. When the speed becomes significant, it may be important to include drag in the calculations.

Basic Two Body Equations

For the earth and Moon:

$$F_e = \sum_{p=1}^{P} \sum_{a=1}^{A} [f_f P_e - f_r (1 - P_m) P_e] \cos(a) \sin(p), \text{ where:} \quad (6)$$

$$F_p = PAf_p \quad (7)$$

$$f_f = f_p \left(1 - (S_o/S_g)^n\right) \cos\theta \quad (8)$$

$$f_r = f_p \left(1 + (S_o/S_g)^n\right) \cos\theta \quad (9)$$

$$P_e = I_f D_e V_{pe} \quad (10)$$

$$P_m = I_f D_m V_{pm} \quad (11)$$

F_p and I_f are the two virtual constants of my equation.

General Relativity applies only when the speed of the object is very high or the mass is very large. Equation 8 and 9 applies only when the speed of the object is very high and the maximum speed is attained when the object is falling towards a very large object.

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