Collision

Introduction

When two objects collides the result of the collision depends on the nature of these two objects and there velocity. Let's assume two object M1 & M2.

M1 mass = m1 velocity V1 = v1
M2 mass = m2 velocity V2 = 0

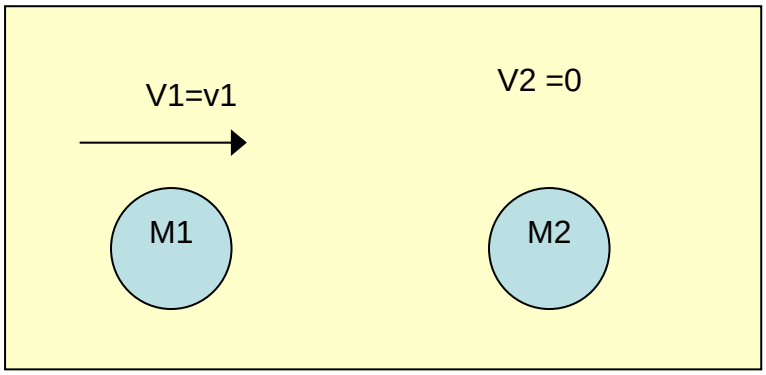

Figure 1

After the collision and according to classical theories the result will be:

V1 = 0 & V2 = v1 if m1 = m2
V1 = v1' & V2 = v2' if m1 > m2 where v1' < v1 & v2' > 0
V1 = -v1' & V2 = v2' if m1 < m2 where v1' < v1 & v2' > 0

Collision

Again this collision can be studied in different way.

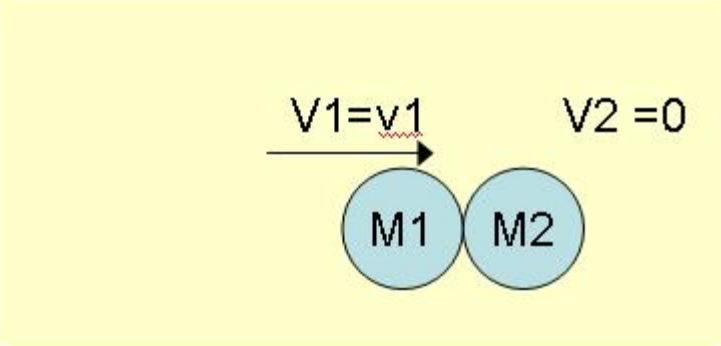

Figure 2

Let T = T0 is the time where M1 just touch M2 but still the collision does not take place. That means the distant between M1 & M2 is ZERO. See figure 2.

At time T0 + dt , dt => 0 M1 should keep moving with V1 = v1 and here the collision starts.

What happens is:

- M1 has velocity v1 and it wants to keep moving with this velocity.
- M2 has velocity = ZERO

That means M2 has to accelerate from 0 to v2, where v2 = v1 in dt
And since:

F = ma and a = v2/dt
Which means F = infinity which is impossible.

One cannot also say that M2 accelerate in a larger time because M1 will not stop waiting for M2 to accelerate!

And if we assume that m1 > m2 that means v1' < v2' at the end of collision. Then **how v2' becomes larger than v1' this will not be possible since there will not be contact between M1 & M2 when v2 and v1 are equals temporary somewhere in collision period before v2' even increase than v1'**

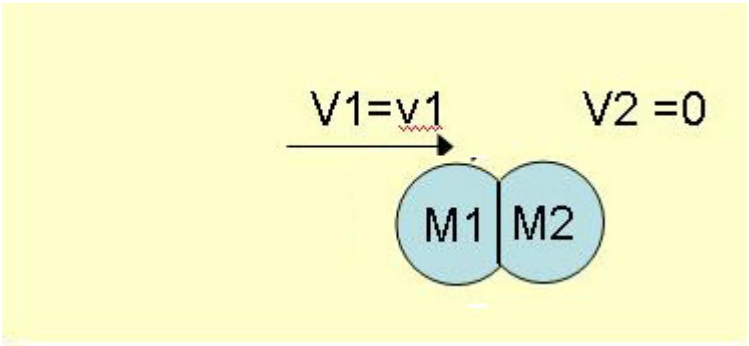

Figure 3

Then what happens is that:

- The first POINT of M1 that collides with M2 STOPS **instantly** while M1 keeps moving with speed V1 = v1.
- More points of M1 keep stopping. This makes the collision is a surface not a single point. see figure 3.
- Due to this deformation a spring-like force takes place in M1 – see figure 4- according to how elastic it is and this force tries to restore this distortion by *pushing* M2 forward and M1 backword. This force accelerates M2 and decelerates M1. And due to this force the same deformation happens to M2. This difformation is what keeps M1 & M2 in contact temprory even when v2' > v1'.

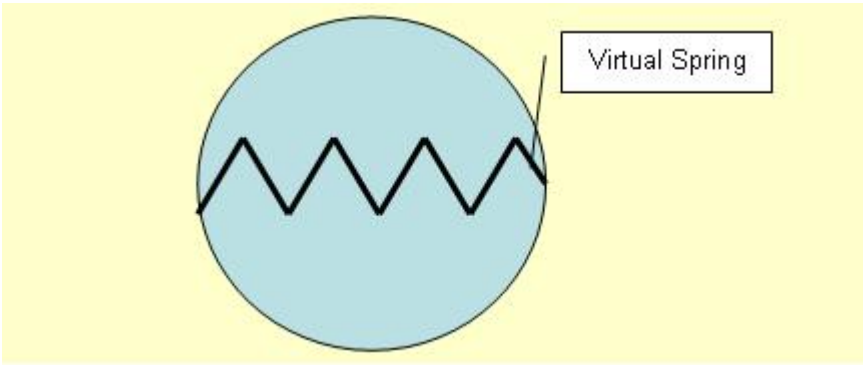

Figure 4

If we apply classical Spring equations:

F = K L to M1 & M2 and use this F to accelerate M2 and decelerate M1 the result will end up with the same result taken from the classical equations of collision as mentioned in the introduction.[1]

Again let's look to the collision but this time let us assume that M1 & M2 are **solid objects that no deformation of any kind will happen either permanent or temporary**. That means they are neither plastic nor elastic.

[1] I tried this myself and developed a software program that simulate the collision and apply the spring equations and it gave me the expected results.

When M1 collide with M2 . M1 STOPS what ever the speed of M1 and regardless of the mass of M1 & M2. Since M1 cannot proceed because this means it needs M2 to have speed of v1' in no time (dt =0), and since it accepts no deformation then the spring effect will not take place and all points will stop.

Even if M2 is elastic if the moving object does not accept any deformation as M1 then M1 will stop.

If A SOLID OBJECT THAT IS NEITHER ELASTIC NOR PLASTIC – *ACCEPTS NO DEFORMATION*- COLLIDES WITH ANY OTHER OBJECT -*THAT IS UNBREAKABLE* -. THE SOLID OBJECT WILL STOP REGARDLESS OF ITS MASS OR VELOCITY.

Conclusion

A solid object that accepts no deformation stops at collision with unbreakable object. This provides a mean to test if a nuclear object is primary or not.

If a primary object hits any other nuclear object and does anything but stopping then it is not primary. One should take into consideration that the charge that exists on some nuclear object such as electrons will act as a virtual spring when the electron is tested against protons. But it will be neutralized when it is tested with positrons (+ve electrons)[2] and then maybe there is noting called anti-matter and the whole story happens because of collision between primary objects.

[2] The charge will not be nuteralized if it is tested against Neutrons because the neutron is an electron and proton together an no prediction which part of them will collide with the electron.