

# A METHOD TO DETERMINE INITIAL VELOCITY, ACCELERATION AND TIME FOR HEAVENLY BODIES IN AN EXPANDING UNIVERSE USING NEWTONIAN MECHANICS

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## INTRODUCTION & ASSUMPTIONS

1. It is possible to determine Euclidean distance e.g. using the Parallax method (triangulation method) and other methods with a reasonable limit of accuracy for 3-Dimensional Space for the Observable Universe. It is a known fact that distances can be measured in space e.g. we know the distance of the moon from the earth, distances of various planets/stars from the Earth often quoted in light years.
2. We assume that the heavenly bodies travels the shortest path in space wrt to the Centre of the Universe (assumption is Universe is expanding) which is a straight line obeying Laws of Euclidean Mathematics and Newtonian Mechanics.

## METHOD AND OBSERVATIONS

Let 's' be the Euclidean distance of the heavenly object from the Centre of the Universe which according to our assumptions is measurable (Reference: A method to determine co-ordinates of planetary objects/stars and other objects in the sky/space in 3-dimensional Euclidean space with respect to the Centre of the Universe - *VOLUME NO.1, ISSUE NO.3 ISSN 2277-1174, Mar 2012*) at time 't' (with respect to the beginning of time) and 'u' be the initial velocity/speed of the body in space travelling with acceleration 'a'. Then according to Newtonian mechanics,

$$s = ut + (1/2)at^2$$

Where u, t and a are the unknown quantities and s is a known quantity.

Let us measure using the same above assumptions and above equations for small displacements in space with respect to distance and time ( $\Delta s$  and  $\Delta t$ ) which are measurable relatively with respect to s and t. Therefore we get,

$$s + \Delta s_1 = u(t+\Delta t_1) + (1/2)a(t+\Delta t_1)^2$$

$$s + \Delta s_2 = u(t+\Delta t_2) + (1/2)a(t+\Delta t_2)^2$$

Now, we get three unknowns u, t and a; and three equations to solve them. Hence the values for u, t and a can be calculated using these three equations for any heavenly body to obtain its initial velocity, its current time and acceleration with respect to the beginning of time and

relative to the centre of the universe. We will get  $t = f(s, \Delta s_1, \Delta s_2, \Delta t_1, \Delta t_2)$  ;  $u = f(s, \Delta s_1, \Delta s_2, \Delta t_1, \Delta t_2)$  and  $a = f(s, \Delta s_1, \Delta s_2, \Delta t_1, \Delta t_2)$  respectively.

## CONCLUSION

This method could be used to calculate time of existence of heavenly bodies, their initial velocity and their acceleration at the current time.

## IMPLICATIONS AND POTENTIAL APPLICATIONS

1. This can be used for calculating time in Space.
2. This can be used for calculating initial velocity in Space.
3. This can be used for calculating acceleration in Space.
4. Can possibly be used to explain Big Bang theory of the Universe

## SUMMARY AND SCOPE FOR FURTHER RESEARCH

I think these equations have important bearing on Big Bang Theory of the Universe and this can lead to a vast domain of further research.

## REFERENCES

1. A method to determine co-ordinates of planetary objects/stars and other objects in the sky/space in 3-dimensional Euclidean space with respect to the Centre of the Universe by Hatim Kanpurwala, VOLUME NO.1, ISSUE NO.3 ISSN 2277-1174, March 2012, Abhinav Journal of Science and Technology.