

A METHOD TO DETERMINE TIME TAKEN FOR LIGHT TO TRAVEL FROM HEAVENLY BODIES TO EARTH AND EXPLAIN SOME SPACE-TIME ANOMALIES USING EUCLIDEAN MATH

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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. According to Einstein the speed of light is constant in space
3. We assume that light travels the shortest path in space which is a straight line obeying Laws of Euclidean Mathematics.

METHOD AND OBSERVATIONS

Let 's' be the Euclidean distance of the heavenly object from Earth which according to our assumptions is measurable and 'c' be the speed of light in space which is a known quantity. Therefore, light emitted or reflected from the heavenly body will follow the following equation –

$c = s/t$ where 't' is the time taken by the light to travel from the heavenly body to Earth.

But c and s are known quantities; hence t can be calculated from the above equation.

Now let us say there is a slight Δs shift in the distance and correspondingly there is a Δt shift in time, therefore,

$$c = s/t = (s + \Delta s)/(t + \Delta t)$$

Hence, cross multiplying we get,

$$st + s\Delta t = st + t\Delta s \text{ therefore,}$$

$$s\Delta t = t\Delta s, \text{ hence,}$$

$$s/t = \Delta s/\Delta t \text{ but } s/t = c, \text{ therefore,}$$

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$$c = s/t = \Delta s/\Delta t$$

Note please all the above quantities in above equations (s, Δs and Δt) are measurable observed values except t which is a calculated value and c which is assumed as a constant in space. Now let us examine some cases of these eqns.

Case 1: Normal

Under this case all the equations are satisfied (i.e. $c = s/t = \Delta s/\Delta t$) for the observations made w.r.t to the heavenly body.

Case 2: Abnormal or Anomaly

Under this case all or part of the equations are not satisfied (i.e. $c = s/t = \Delta s/\Delta t$ are not satisfied) for the observations made with respect to the heavenly body. Possible explanations are as follows –

1. Light travels around a curved path under the gravitational effects of large bodies nearby, hence the equations do not hold true (Reference: en.wikipedia.org/wiki/Tests_of_general_relativity).
2. There is a time dilation or contraction in space-time in absence of gravitational effects of large bodies (Reference: en.wikipedia.org/wiki/Twin_paradox; Einstein's Twin Paradox). I strongly suspect and have a hunch that this equation can be used to explain Einstein's Twin Paradox.
3. And last but not the least we could possibly conclude in the case of this anomaly that the speed of light is not constant in space but a variable which could possibly upset Einstein's assumption about the speed of light being constant in space.

CONCLUSION

This method could be used to calculate time taken by light from heavenly bodies to reach Earth. In addition it could be used to approve/disapprove some of the Anomalies in Space-time and Einstein's theories about light and space-time travel.

Implications and potential applications

1. This can be used for calculating time in Space.
2. Explaining some of the Astronomical Anomalies
3. And possibly explain Einstein's Twin Paradox.

Summary and Scope for further research

I think these equations have important bearing on Theory of General Relativity and Special Relativity by Einstein which has a vast potential for further research.

REFERENCES

1. en.wikipedia.org/wiki/Tests_of_general_relativity.htm
2. en.wikipedia.org/wiki/Twin_paradox.htm