

# EXTRA GALACTIC ASTRONOMY

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ABSTRACT: COSMO TIME MACHINE

Universe is a collection of billions of galaxies. These are governed in their respective positions by a force called “gravity”. Gravity extends in the dimensions of space and time. Space is an empty dimension around us. It is disturbed like the ripples in a pond. Stars, usually possess high gravitational force. When the star, ten times greater than the size of the sun collapses, the gravitational force becomes so intense that the space and time dimensions behave like a whirlpool. Escape velocity can be calculated in Newtonian gravity by energy conservation of an object of mass  $n$  in the gravitational field of a planet of mass  $m$  in  $d$  dimensions.

$$(1/2mv_1^2 - G_N Mm)/R_1^{D-2} = 1/2 mv_2^2 - (G_N M m)/R_2^{D-2}$$
$$v_2=0, R_2=\infty$$

So  $v_1 = v_{\text{escape}} = \sqrt{(2G_N M / R^{D-2})}$  Under these conditions, escape velocity from the surface of some star will be equal to the speed of light.  $v_{\text{escape}} = c = \sqrt{(2G_N M / R^{D-2})}$

$$R_{\text{gravity}} = (2G_N M / c^2)^{1/(D-2)}$$

The time is disturbed so much that it appears like a whirlpool. This expected condition is essential for time travel. Assuming an object which caught under the gravitational force of the black hole, it will get accelerated at a velocity greater than the velocity of light ( $v > c$ ). According to Einstein's time dilation theory,

$$t = t_0 / \sqrt{1 - v^2/c^2}$$

when  $v^2 = c^2$ ;

$t$  becomes  $\infty$ . Henceforth, time becomes stationary. Logically this indicates that from an observer's frame of reference, a body can move either to the past or future.

Keywords: gravitational force, time dilation, escape velocity.