

Limited visual radius of the universe or Hubble's length.

$$\lambda_H = \frac{c}{H_0} = m_u \cdot \sqrt{\frac{a_c}{2\pi \cdot \sqrt{e} \cdot G_u \cdot P_A^0}}$$

The formula above represents the Hubble length being a value of 13.75 billion light years. Which means it took light to reach that distance in 13.75 billion years or 13,750,000,000 years (age of the universe).

The acceleration of the universe represents the universe expanding in all directions. If one could artificially increase the square of the acceleration of the universe or on a local scale, one might be able to see further out in space. The acceleration could not be equal to zero because this would make Hubble's length equal zero as well therefore making the universe nonexistent. The rate of space expanding does not follow the laws of relativity and can expand faster than light can travel. This could be a precursor to natural FTL because you are not breaking the speed of light.

a_c = Acceleration of the universe = $6.914 \cdot 10^{-10} \text{ m/s}^2$ Treat this value as an average. This acceleration is not constant over time.

c = Speed of light in a vacuum = $299,792,458 \text{ m/s}$

\sqrt{e} = square root of the natural log = 1.648721271...

G_u = Total estimated gravitational force of the universe = $7.604399768 \cdot 10^{44} \text{ J/m}$

H_0 = Hubble's constant = $1.299915373 \times 10^{26} \text{ m}$

λ_H = Hubble's length = $1.299915373 \cdot 10^{26} \text{ m} = 13.75 \text{ billion light years distance (radius)}$

m_u = Total estimated mass of the universe = $4.3879535301 \times 10^{53} \text{ kg}$

P_A^0 = Area density = 1 kg/m^2 (used as a reference point in space.)