

Black holes and the expansion of space

Eran Sinbar, eyoran2016@gmail.com, Ela 13 Shorashim, Misgav, Israel, 2016400

Abstract: This Essay suggests a way to prove that curved space-time guides photonic light how to move, but unlike matter, photonic light will not guide space-time how to curve. This will lead to the conclusion that photonic light has no direct gravitational effect on space-time. This conclusion leads to the source of dark energy which accelerates the expansion of space-time.

1. *Introduction*

Matter always travels below the speed of light and its velocity is a function of the observer's frame of reference. Light (photonic energy) always travels at the speed of light for all the observers in all the frames of reference. This difference between matter (or anti-matter) and light can result from their different interaction with space-time, in which matter curves space-time and light doesn't affect the curvature of space-time. If that is the case, then a pair of matter and anti-matter particles should not influence the overall curvature of space time, since they can annihilate each other to become a photon. Since matter curves space-time (time runs slower), anti-matter should expand space-time (time runs faster) to conserve the overall curvature of space-time (the flow of time). If photons curve space-time, this curvature will resist the dark energy expansion effect, and observation of cosmic highly energetic gamma rays will show a smaller red shift effect, due to dark energy space-time expansion, compared to cosmic rays with lower energy. Since this paper claims that photonic energy does not curve space-time, the expected observations by this paper are that the red shift effect on photonic cosmic radiation due to the expanding space-time will not depend on their wavelength (energy) since they do not curve space-time and cannot resist the expansion of space-time.

2. *Black holes and anti-matter*

Assuming antimatter expands space-time and matter curves space-time, it's a logical conclusion to assume that as matter and anti-matter pop into existence on the edge of the black hole event horizon, matter will tend to flow towards the black hole singularity while anti matter will tend to flow away from the black hole due to its anti-gravitational behavior. This leads to the conclusion that black holes evaporate through Hawking radiation made of mostly anti-matter particles which expands space-time. As the number and size of the black holes increase since the big bang, the Hawking radiation of anti-matter increases, and the expansion of space - time accelerates. This leads to the acceleration of space-time observations. This paper expects that observations will find correlation between the expected increase in the Hawking radiation since the big bang and the acceleration in the expansion of space-time (through cosmic red shift observations). The anti-gravity behavior of anti-matter (gravitational symmetry breakdown between matter and anti-matter) prevents these anti-matter particles from clustering into observable anti-matter objects (the missing anti-matter).

Conclusion

This Essay suggests a way to observe through the cosmic red shift effect, that photons have no direct gravitational effect on space-time. This Essay also suggests correlating between the expected increase in the Hawking radiation since the big bang and the observed acceleration in the expansion of space-time. A high correlation will prove that Hawking radiation is the dark energy that expands space-time.