

CHARTING THE SLOW DEATH OF THE UNIVERSE

A recent study of 200,000 galaxies found they had lost half their energy in just 2 billion years. According to the report by an international team of astronomers, the energy produced in a section of the universe today is only about half what it was two billion years ago. **This fading is occurring across all wavelengths from the ultraviolet to the far infrared. The universe is slowly dying, the researchers say.**

The team studied more than 200,000 galaxies to measure the energy generated within a large portion of space. The survey data includes measurements of the energy output of each galaxy at 21 wavelengths, from the ultraviolet to the far infrared. This study, part of the Galaxy And Mass Assembly (GAMA) project, the largest multi-wavelength survey ever put together, involved many of the world's most powerful telescopes and represents the most comprehensive assessment of the energy output of the nearby universe.

All the energy in the universe was created in the Big Bang, with some portion locked up as matter. Stars shine by converting matter into energy, as described by Einstein's famous equation $E=mc^2$. The GAMA study sets out to map and model all of the energy generated within a large volume of space today and at different times in the past. While most of the energy sloshing around in the universe arose in the aftermath of the Big Bang, additional energy is constantly being generated by stars as they fuse elements like hydrogen and helium together. This new energy is either absorbed by dust as it travels through the host galaxy, or escapes into intergalactic space and travels until it hits something, such as another star, a planet, or, very occasionally, a telescope mirror.

The concept that the universe is slowly fading has been known since the late 1990s, but this work shows that it is happening across all wavelengths from the ultraviolet to the infrared, representing the most comprehensive assessment of the energy output of the nearby universe. The universe will decline from here on in, sliding gently into old age. The universe has basically sat down on the sofa, pulled up a blanket and is about to nod off for an eternal doze.

This is, of course, talking about the generation of energy only, and not the total energy content of the Universe. Being a closed system nothing can get lost. The matter / mass / energy density can decrease or re-balance as the universe expands, but should increase again at a later contraction to the same level, should this eventuate.

The same reasoning applies if we consider the theory that the positive and negative energies of the universe are in balance at all time. Positive energy being the matter / mass / energy content that make up our Universe, which is then balanced by the Negative energy of Gravity. The two of them perfectly balanced whatever cosmic process the Universe is going through, right from a big bang to a big crunch. In other words the world we know came from a Nothing, which was divided into its positive and negative component by something like the Big Bang and is trying to get back to the Nothing it came from in a cosmic recombination of the positive energy of mass and the negative energy of gravity

The interesting question here is can this recombination take place within parts of the Universe? Can the Universe lose substance incrementally, bit-by-bit? Is a Black Hole a step towards this process? Or can that recombination only take place once, when all the cosmic conditions are right?

But then, if the Positive and Negative energies are perfectly balanced at all time, all over, why does the recombination not taken place now, or better, why has it not taken place a long time ago? Does Space enter the equation? Then why does a Black Hole of supposedly zero dimensions still exist and we can measure its gravitational effect on its surroundings? Are there more conditions that need to be right? What are we missing?

Stay tuned!

