Einstein-Noether Relativity leads to torus-shaped black holes and to an eternal and spherical Universe

Emmy Noether warned Albert Einstein about the lack of energy conservation in his theory of General Relativity, something which Einstein never got around to correct. Our Einstein-Noether Relativity theory is the merger of Einstein's relativity theories with Noether's theorems of energy and momentum conservation. This merger results into two *new* solutions to Einstein's theory of General Relativity: the gravitational field of a sphere and the gravitational field of the Universe. The *current* solutions to Einstein's theory of General Relativity have been corrected for Noether's theorem. These modifications seem minor, but are crucial. Our *new* gravitational field of the Universe, the former Robertson-Walker Solution, leads to an eternal and spherical Universe. Our *new* gravitational field of a sphere, the former Schwarzschild Solution, leads to torus-shaped black holes.

The eternal and spherical Universe, proven by IOPscience

The current view of the Universe is based on the Big Bang, the total energy of the Universe suddenly appearing at time zero. The logical question is then, where did that energy suddenly come from? Energy conservation of the Universe *demands* that the Universe is eternal. At the very least the *amount* of energy must remain the same over time to ensure energy conservation of the Universe. In our *new* solution, this conserved energy is even specified (for the experts: $c^5/(G.H)$ joule), or about 125 billion times the total mass-energy of the Milky Way.

When we look at the number of galaxies over distance, you would expect two things: 1) a quadratic increase over distance, since the surface of a sphere increases quadratically with distance, and 2) an even higher increase than quadratically since galaxies merge and we look into the past. However, when you look at the actual number of galaxies over distance observed and counted, like IOPscience (Institute Of Physics, UK) have done, you will discover that the maximum number of galaxies is found on or around a redshift of 1.0 (z = 1.0); see figure 2.

Redshift is the extent to which the white light of stars is shifted to the red when received on Earth. Redshift is an indication of distance, as Hubble discovered. So how could the number of galaxies *decrease* over and above a redshift of about 1.0? There is a simple explanation: the Universe is spherical in a way Einstein described in his book 'My Theory' of 1917. Based on our Einstein-Noether Relativity theory, the Universe is eternal and spherical.

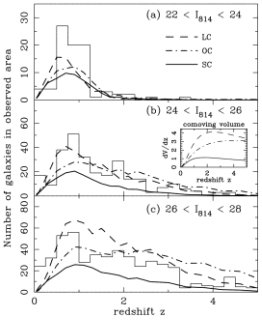

Fig. 2: Galaxies over distance

The massive black hole in the center of the Milky Way is observed as a stripe

In the current view on black holes, a singularity with an event horizon, momentum is not conserved. How would it be possible to have any (angular) momentum of a singularity anyway?

Conservation of energy and (angular) momentum leads to torus-shaped black holes. In *our* new view on black holes, a torus-shaped mass *without* an event horizon, both energy and (angular) momentum are conserved. The central black hole in galaxy M87 confirms this shape; see figure 1.

One can clearly see the counterclockwise rotation of this torus-shaped black hole. The current explanation of this torus as a 'shadow' of a singularity with an event horizon is hard to substantiate. This torus is shown at an (almost) top view.

Looking from the side, the torus shape is observed as an ellipse, or even as a stripe, like the massive black hole in our Milky Way. One of the reasons why this central and massive black hole in our Milky Way is still not observed by the EHTC (the Event Horizon Telescope Collaboration), is thus that they are looking for a circular shape, its shadow. The authors urge the EHTC to look for a stripe, not a circle.

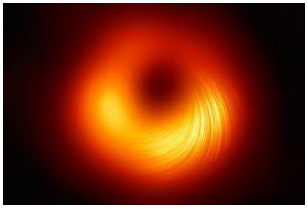

Fig. 1: Black hole in M87

More information and authors

For more information: see our books and articles on www.loop-doctor.nl.

MSc. Rob Roodenburg and MSc. Maarten Palthe (authors), MSc Frans de Winter (coauthor), MSc. Oscar van Duijn (coauthor), MSc. Henk van de Hulst (coauthor), Alfred M. Jacobsen (editor).

Schiedam, The Netherlands, January 2022