

Good practices SCIEN_710BC_EN

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Description of the problem / exercise: **Black Hole or White Hole?**

Cosmic Conversations: Black hole or white hole?

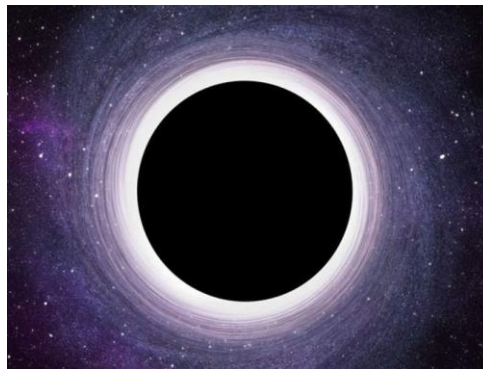


Figure 1: Black Hole

Even the youngest children have heard of a black hole (Figure 1). Scientifically explained, a black hole is created when a finite mass is compressed into a volume smaller than a critical value in a process called gravitational collapse. The gravitational force that causes matter to contract then becomes greater than any other force of matter, and the matter contracts to a single point. At this point, according to general relativity, certain physical quantities become infinite (see gravitational singularity). In the region of space surrounding the singularity, gravity is so strong that neither matter nor light can escape. Or can it? If so, it must be in the form of a white hole.

A comparison of a black hole or a white hole through a unique creation of the inventor of the Poly-Universe (Figure 2)

- *Why this exercise is good:* During the conversation, the children should first get a sense of the black hole's singularity. They need to be able to imagine themselves in this tight situation where we have to strip away our mundane parameters. Then we imagine that immense amounts of matter and energy are being expelled in the form of white holes, and a new world is being created.
- *Which level is recommended:* Upper primary school, secondary school
- *School subject(s):* Analysis of works of art, physics
- *Comments:* https://en.wikipedia.org/wiki/Black_hole

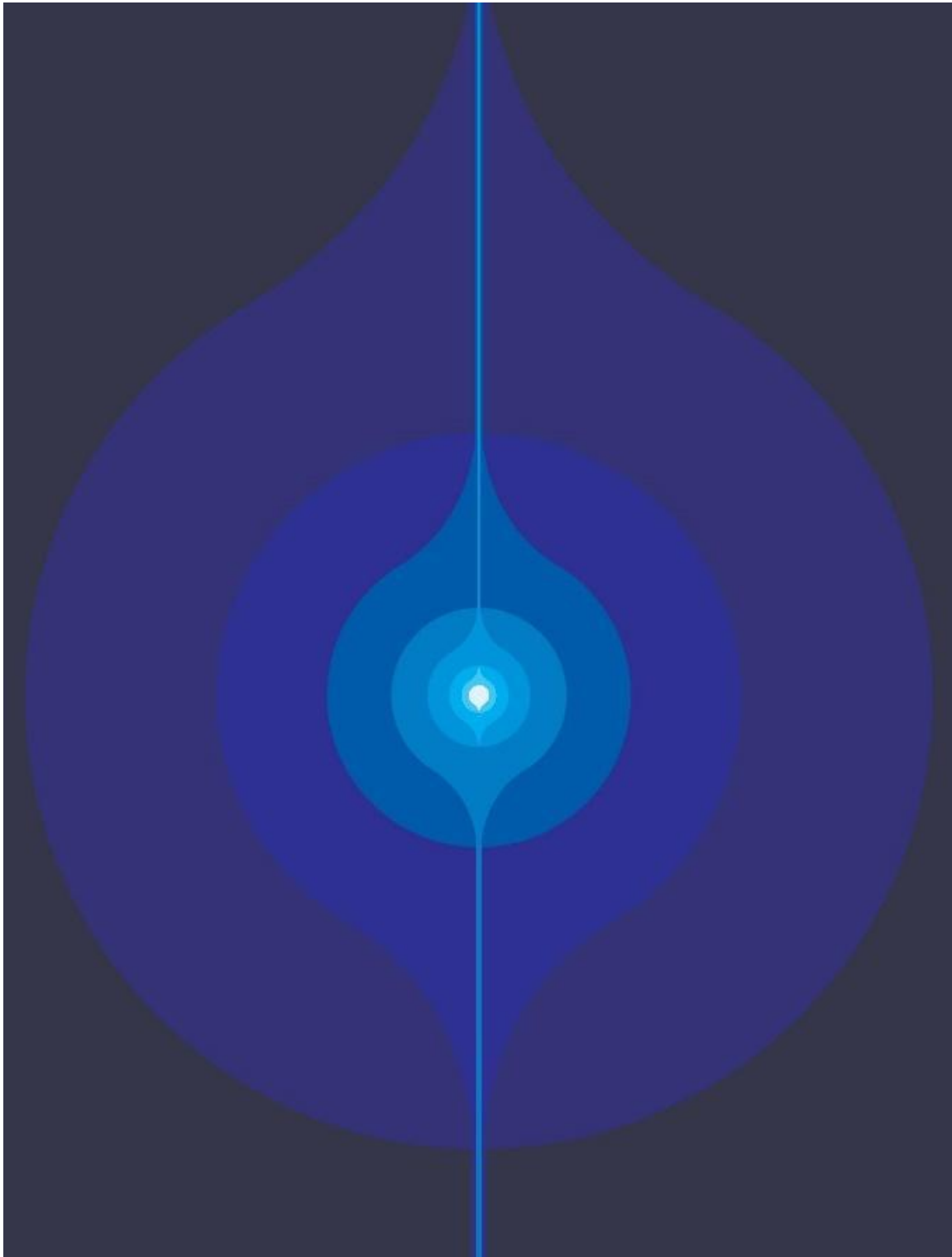


Figure 2: SAXON, White Hole 1991, oil on canvas, 90x110 cm