Schrodinger's cat in the time domain

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Abstract

Schrodinger's cat describes a paradox in which a cat is located in a sealed black box with a poison sealed capsule inside it. Radioactive source decays and emits radiation, which activates a Geiger counter, The Geiger counter generates a signal to release poison from the capsule and kill the cat. Since the decay of a radioactive source is a random sub atomic event, based on quantum mechanics we can only derive a probability-based assumption on the exact time that the decay of the radioactive atom will occur. The Copenhagen interpretation says that until an observer opens the box, the entire system is in superposition and the cat is both dead and alive. In this paper, I will show that we can extrapolate this superposition paradox also to the time domain and the entropy level of the system.

Introduction – Schrodinger's cat in the time domain

Let us reconstruct the same thought experiment (figure 1) where a newly born kitten is located in a rocket, orbiting far away from the black hole gravitational influence (orbit A). As the radioactive atom (which is located in the sealed rocket) decays randomly, it radiates, and the Geiger counter detects the radiation and generates an electric signal that activates the rocket engine, which sends the rocket with the cat inside it to circle near the black hole's event horizon (orbit B). Assuming that near the event horizon time nearly stops due to the strong gravitational time dilation, the age of the cat (or the entropy of the system), becomes a function of a random quantum effect due to the radioactive atom decay.

Summary

There seems to be a dependency between the cat's age (the entire systems entropy) and the quantum mechanical random effect of the radioactive atom decay.

If the entire macro system (rocket, orbit A, orbit B and the cat) are in a sealed unmeasurable region ,based on the Copenhagen interpretation , until the observation (the collapse of the Schrodinger's wave equation) ,the cat age is a superposition of all the possible ages from a newly born kitten to an old or even deceased cat. The location of the rocket is a superposition of orbit A, orbit B and the space between them. This Copenhagen interpretation leads to a disturbing conclusion, which requires that the macro system, Schrodinger wave function, will collapse when measured, in both the space and the time domain. The second law in thermo- dynamics requires that the system entropy will increase in time. In our thought experiment, the entropy level of the entire macro system is dependent only on a single radioactive atom that radiates spontaneously totally disregarding the second law of thermo-dynamics.

I recommend approaching this paradox in two different directions:

The many worlds interpretation

https://vixra.org/pdf/1911.0136v1.pdf

The conservation of time through entanglement between matter and anti-matter.

https://vixra.org/pdf/1608.0199v1.pdf

https://vixra.org/pdf/1608.0198v1.pdf

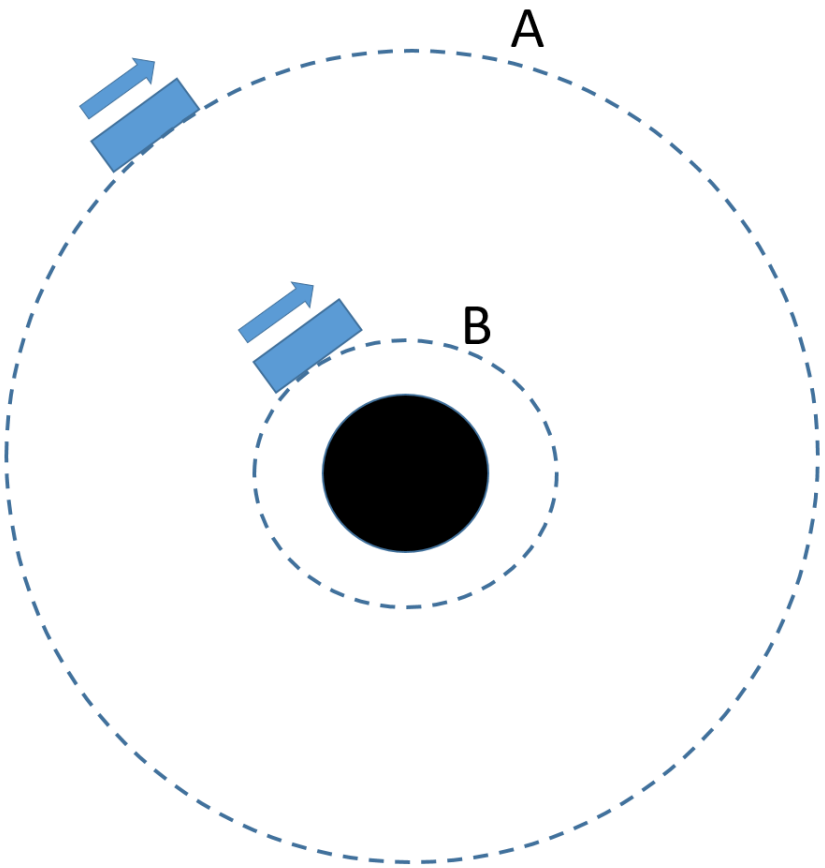

Figure 1: The blue rectangle illustrates the rocket with the cat and the radioactive atom inside. The blue arrow above indicates the direction in which the rocket is orbiting around the black hole. The black circle in the center illustrates the black hole. The dashed circle with the letter A is the orbit far away from the gravitational influence of the black hole .The dashed circle with the letter B is the orbit near the black holes event horizon where time slows down due to gravitational time dilation. The random decay of the atom will cause the rocket to move from orbit A to orbit B, which will slow the aging process of the cat, and will influence the entropy level of the entire system.