It is a series based on black holes by Sameer.

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Suggested reading: Black holes and baby Universe by Stephen Hawking

**Black holes**

They are based on theory of General relativity.

String theory is one the the pioneering fields of research in Physics. Black holes , the existence of dark matter etc are one of the many applications of string theory.

Black holes extremely dense spherical objects.(high mass low volume)

They are black as they cannot be visualised.

They possess very high gravitational force that even light is not reflected back. The high gravitational force is due to small value of r (force of gravity=Gmm÷r2)

From Einstein’s equation, E=mc2mass is a form of energy,Anything that has energy has gravitational pull on itself.

How do black holes look?

(Picture from movie INTERSTELLAR directed by Christopher Nolan based on the book written by Kip Thone)

Light goes around the black hole. It has a bright region around the corner. The inside is dark.

It is not possible to actually find out what is inside the black hole since they are light years away and there is no means of such long journeys.

Scientists speculate based on available information’s. These speculations can be categorised into

1. Inner effect(cannot be observed)
2. Outer effect

The outer effects can be observed. It is also possible to theoretically calculate outer effects and determine the outer effect. If the theoretically determined value tallies with that observed, then the speculation is correct. These are effects found to be true for black holes.

There are different types of black holes.

Black holes have matter within them and looks black . They have an inner and outer region. The outer region is called the event horizon(bright region ).The theories on black holes are applicable outside event horizon.

String theory can help us understand black holes better , what happens at the event horizon

Inside ofthe black holes is studied based on gravitational waves. The next video will be based on how black holes are formed.