

What would it be like to fall into a black hole?

September 8 2014, by Brian Koberlein



This artist's impression shows the surroundings of the supermassive black hole at the heart of the active galaxy NGC 3783 in the southern constellation of Centaurus (The Centaur). Credit: ESO/M. Kornmesser

Let's say you decided to ignore some of my previous advice. You've just purchased yourself a space dragon from the Market on the Centauri Ringworld, strapped on your favorite chainmail codpiece and sonic sword and now you're going ride head first into the nearest black hole.

We know it won't take you to another world or galaxy, but what would you experience and see on your way to your inevitable demise? And what would the rest of the Universe see as this was happening, and would they point and say "eewwwwww"?

If you were falling toward a black hole, most of the time you would simply feel weightless, just as if you were playing Bowie songs and floating in a most peculiar way in the International Space Station. The gravity of a black hole is just like the gravity of any other large mass, as long as you don't get too close. But, as we've agreed, you're ignoring my advice and flying dragon first into this physics nightmare. As you get closer, the [gravitational forces](#) on various parts of your and your dragon's body would be different. Technically this is always true, but you wouldn't notice it... at least at first.

Suppose you were falling feet first toward a black hole. As you got closer, your feet would feel a stronger force than your head, for example. These differences in forces are called tidal forces. Because of the tidal forces it would feel as if you are being stretched head to toe, while your sides would feel like they are being pushed inward. Eventually the tidal forces would become so strong that they would rip you apart. This effect of tidal stretching is sometimes boringly referred to as spaghettification.

I've made up some other names for it, such as My Own Private String Cheese Incident, "the soft-serve effect" and "AAAHHHHH AHHHH MY LEGS MY LEGS!!!".

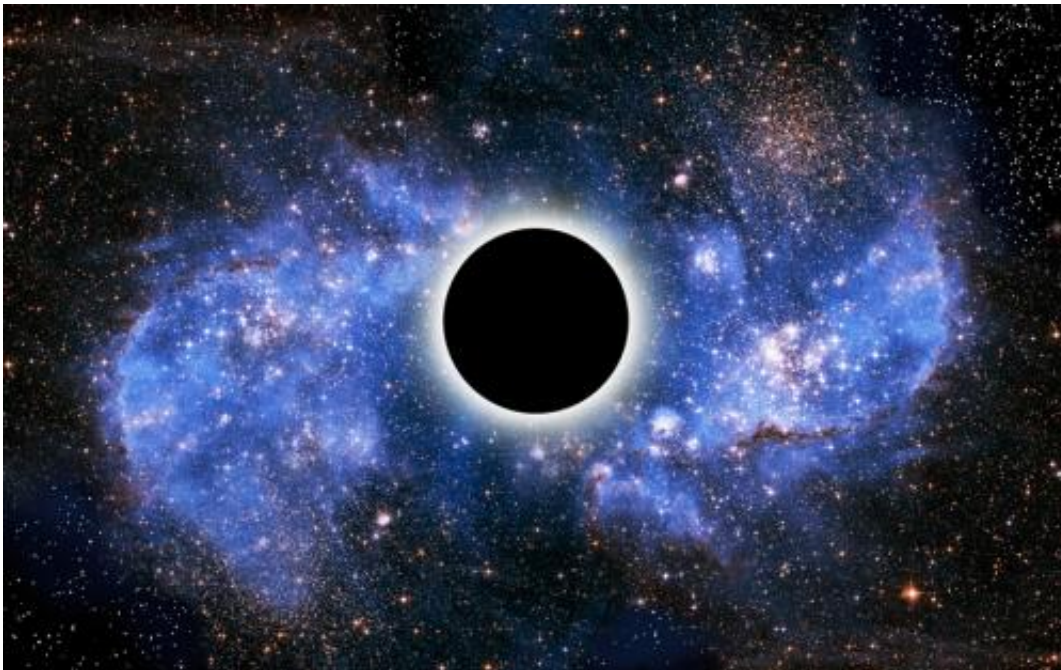
So, let's summarize. You wouldn't survive falling toward a black hole because you wouldn't listen. Why won't you ever listen?

A friend watching you fall toward a black hole would never see you reach the black hole. As you fall towards it, gravity would cause any light

coming from you to be redshifted. So as you approached the black hole you would appear more and more reddish, and your image would appear dimmer and dimmer. Your friend would see you redden and dim as you approach, but never quite reach, the [event horizon](#) of the black hole. If they could still see you past this point, there would be additional red from the inside of you clouding up the view.

Hypothetically, if you could survive crossing the event horizon of a black hole, what

would you see then? Contrary to popular belief, you would not see the entire future of the universe flash before you.



Artist's conception of the event horizon of a black hole. Credit: Victor de Schwanberg/Science Photo Library

What you would see is the darkness of the black hole fill your view and as you approached the event horizon you would see stars and galaxies on the edge of your view being gravitationally lensed by the black hole. The sky would simply appear more and more black until you reach the event horizon.

Many people think that it is at the event horizon where you would be ripped apart, and at the event horizon all sorts of strange things occur. Unfortunately, this goes along with those who suspect [black holes](#) are actually some sort of portal. For a solar [mass black hole](#), the tidal forces near the event horizon can be quite large, but for a [supermassive black hole](#) they aren't very large at all.

In fact, the larger the black hole, the weaker the tidal forces near its event horizon. So if you happened to be near a supermassive black hole, you could cross the event horizon without really noticing. Would you still be totally screwed? YOU BETCHA!

What do you think? If you could drop anything into a black hole, what would it be? Tell us in the comments below.

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