

62 - Black Holes

Did you know the gravitational pull of black holes is so strong, not even light can escape it? But what is a black hole, how are they formed and what would happen if you got too close to one?

Scientists believe black holes have been around since the beginning of the universe, and there may be billions of them! However, astronomers weren't certain they even existed until around 50 years ago. And they didn't get the first image of one until only two years ago. So we're still learning a lot about them.

One thing most people think of when they think of black holes is that they're like a vacuum cleaner, sucking up everything in sight -- like stars and meteors and comets! And that if a giant black hole were to suddenly enter our solar system -- it would suck up moons and planets as well! Now that's a scary thought! But don't worry. The truth is, a black hole is NOT like a vacuum.

But what IS a black hole? As an old star dies, the outer part of it explodes into space in what's called a supernova. When that happens, the star's inner gravity runs wild, pulling on the rest of the star's matter, the "stuff inside," and packing it into a tiny central spot called the "singularity." This is how the most common type of black hole, the "stellar" black hole, is formed. All that matter being packed into an area so small creates a gravitational field so strong around the singularity that even light can't escape it. But there's an edge to this field, called the "event horizon,". It's like the black hole's property line. Cross the event horizon, and you get sucked in... but stay outside of it, and you'll be fine! Phew!

What You'll Learn

1. How are black holes formed?
2. What would happen if the sun turned into a black hole? Or, if a black hole entered our Solar System?
3. What would happen to you if you were to go into a black hole. (Trust us, you don't want to!)

Activities

1. How do black holes work? Check out [this](#) easy science experiment to see how some things are pulled into a black hole.
2. [Here](#) is a fun video explaining how a black hole works!

3. Gravity keeps things in orbit by pulling on them. Check out [this](#) fun experiment to see how it works!

Additional Resources

Want to learn more about black holes? [NASA](#) has the latest information about black holes and how they work. They even have photos from their deep space telescopes Hubble and Swift! Because they are so far away and difficult to study, sometimes scientists have to make theories, or guesses, about black holes. These theories have to wait to be tested until scientists have new technology or information to see if they are right or not. What are some of your guesses about black holes?

Kid News

How do you buy things at the store? Do you have cash and coins or do your adults have you earn the money and pay with their credit card? Recently, because of COVID-19, the United States has been having trouble getting coins to banks and businesses. People are not buying as much and the United States Mint has had to cut back how many coins they are making. Read more about this unique COVID-19 situation [here](#).¹

¹ This activity guide is for the Who Smarted? podcast www.WhoSmarted.com