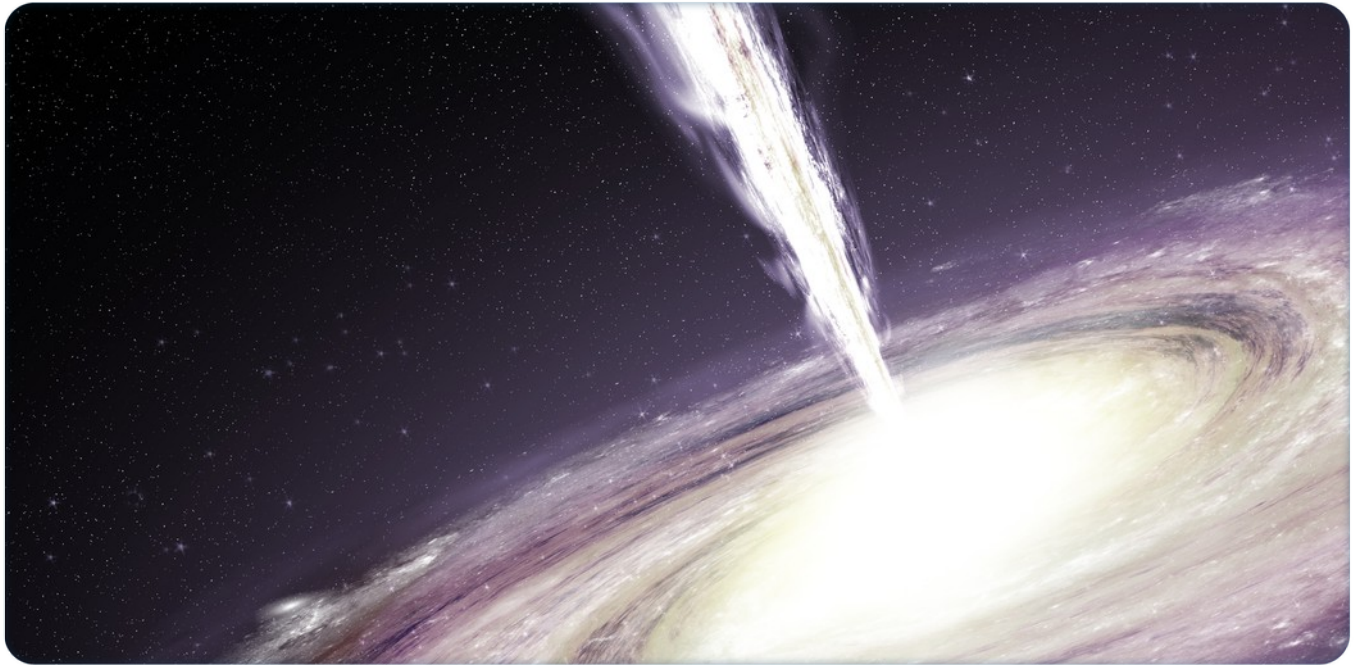




The Big Rip is Coming, Look Busy!



For thousands of years, people have been asking the same questions about the Universe we live in. Does the Universe go on forever or does it have an edge? Has it always existed and if not, how old is it?

Around 100 years ago, an astronomer made a major discovery that helped us to answer these questions: he discovered that the Universe is growing.

The discovery told us that the Universe has not always been the same size, and it probably hasn't always been here. Most people now believe the Universe began in a Big Bang around 14 billion years ago.

Since then, the Universe has been expanding outward. The Universe we see today is billions of times bigger than it was when it was very young.

But that isn't all. We can see that galaxies are all moving away from each other, and the ones that are further away are moving faster. In other words, the Universe is growing faster over time.

To better understand how the Universe is changing, we need to look back to when its growth spurt really began, in its teen years.

Looking back in time can be tricky but it's not impossible. We just need to find very bright, very distant objects, and we need to know exactly how bright they are. Things get dimmer as they move away, so knowing their brightness allows us to work out how far away an object is.

Turns out, a gas-guzzling supermassive black hole would do the trick. We call these 'quasars' and they shine bright enough to be seen from 12 billion light years away! However until very recently we were missing a key piece of information about quasars – their brightness.

Scientists have now found a way to work out exactly how bright some quasars are, providing us with a way to fill in the gap along the cosmic timeline. And it's revealed some exciting and scary things...

Our Universe is going to continue expanding faster and faster, heading towards a "Big Rip". In billions of years, the same energy source that is pushing space to expand could literally tear all the galaxies, stars and atoms in our Universe apart!

COOL FACT

Other ideas on how the Universe will end include the Big Crunch and the Big Freeze. The Big Crunch says the Universe will one day stop expanding and start collapsing. The Big Freeze will happen if the Universe keeps expanding until all the galaxies, stars and planets will be pulled so far from one another that the night sky seems dark and empty no matter where in the Universe you are.



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