SPACE awareness

SPACE SCOOP

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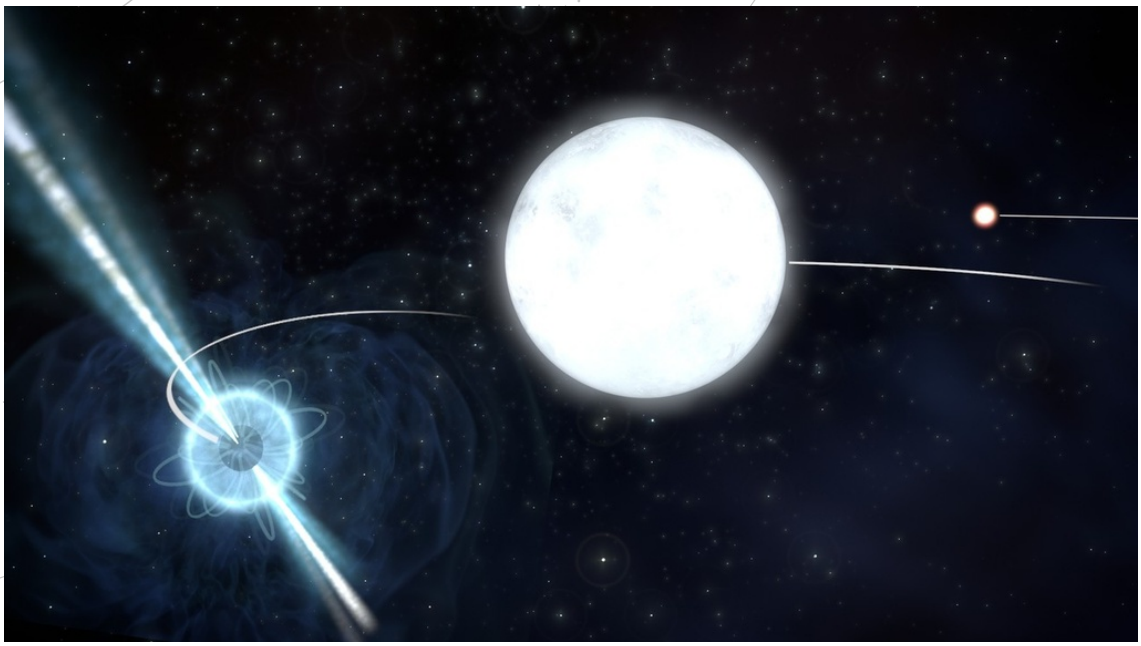

Even Massive Stars Fall Like a Feather

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Over 400 years ago, the famous scientist Galileo Galilei climbed to the top of Leaning Tower of Pisa and dropped two balls of different weight. While you might expect the heavier ball to fall faster, he actually found that they both hit the ground at the same time.

This was a big discovery; it showed us that the mass of an object doesn't affect way gravity pulls on it. All things fall at the same rate, no matter how heavy they are.

Many years later, an astronaut repeated the experiment on the Moon. He dropped a hammer and a feather at the same time, from the same height, and sure enough, they hit the ground at the same time. You might have noticed that this doesn't really work on Earth. Unlike the moon, we have an atmosphere and air pushes back on falling objects, slowing some down more than others.

Today, we understand gravity much better than we did in Galileo's day, thanks to Albert Einstein. About 100 years ago, Einstein came up with a theory of gravity that has so far passed all tests, in laboratories and out in the Solar System.

But astronomers are always looking for new ways to check Einstein's theory in extreme conditions. The most recent test used a distant group of stars to find out whether the theory works with objects that have super strong gravity.

The group included two small white dwarf stars and a pulsar. The gravity on a pulsar is 2 billion times stronger than gravity on Earth, making it the ideal test subject.

If Einstein is right, the pulsar and its closest white dwarf neighbour should be pulled in the same way towards the second, more distant white dwarf star.

Pulsars provide a handy way to measure their movement — they shoot out bright jets of light. Like a lighthouse, this pulsar sweeps the Earth with beams of light 366 times a second. These regular pulses of light can tell us how the pulsar is moving.

After six years and 8,000 measurements, astronomers have found that the pulsar and white dwarf are both moving in the same way — Einstein's theory of gravity has passed with flying colours once again!

COOL FACT!

According to Einstein's theory, gravity affects light as well as objects. Light is bent as it moves around objects with strong gravity. Read more about this strange phenomenon in the Space Scoop, "Giant Cosmic Magnifying Glass Finds Baby Stars".