

THE SEARCH FOR PLANET NINE

IS A NEPTUNE-SIZE WORLD HIDDEN
IN OUR SOLAR SYSTEM?

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Way out in the farthest reaches of the solar system, a mysterious undiscovered planet orbits through space. It's gigantic—almost four times the size of Earth. And it's so far away that it takes up to 20,000 years to orbit the sun.

This planet isn't science fiction. Astronomers think it really exists. They've dubbed it Planet Nine, and they're searching the skies to find it.

FAR OUT

When most people think of our solar system, they think of its eight planets and our sun. But not astronomer Mike Brown. Brown is interested in the region of space *beyond* these eight planets. "There's this huge part of the solar system that we're only just beginning to learn about," he says.

Beyond Neptune is an area known as the Kuiper (KY-pur) belt, which scientists used to think was empty. But it turns out the Kuiper belt is home to icy, rocky objects; billions of comets; and a few dwarf planets (objects too small to be considered planets) such as Pluto.

While observing the belt in 2014, Brown and his research partner, Konstantin Batygin, saw something strange: The orbits of many of the smaller objects in the Kuiper belt were aligned. Weirder still, they never came closer to the sun than Neptune. It was like something was pulling them away. But what?

STRANGE SPACE

Brown and Batygin spent over a year trying to figure out the objects' odd behavior. They discussed several potential answers—but only one seemed to work. "We were convinced another planet was out there," Brown says.

To find out if they were right, the pair created a computer model illustrating the objects. Then they plugged an imaginary planet into the model. The model showed that the planet's gravity would pull on these icy objects, making them move in exactly the way they had moved in space. The model also gave the scientists an idea of the planet's size. Because of its strong gravitational pull, Brown and Batygin inferred that

the planet would be roughly the size of Neptune. Like Neptune, it would likely be made of gas, and the temperature there would be a frigid minus 374.8°F.

"It's hard to believe that we could miss something as big as Neptune!" Brown says. But the planet is *really* far away, about 56 billion miles from Earth. Only a little light would hit it. If it exists, only two telescopes in the world are powerful enough to search vast areas of the sky for it efficiently—and until now, they haven't been looking for the planet.

THE HUNT IS ON

Brown and Batygin are convinced that their evidence proves that Planet Nine is hidden somewhere beyond the Kuiper belt. But Brown predicts the search will take at least a few years.

Soon future telescopes will let us peer even farther into space. And when we do, Brown thinks we may discover that Planet Nine isn't the only thing out there. "Planet Nine is the planet for *my* generation," he says. "But Planet 10? That's what tomorrow's astronomers—kids growing up today—will look for."

OUR NEW SOLAR SYSTEM?

Scientists aren't sure of Planet Nine's exact location, but they think it might lurk in the outer edges of our solar system, somewhere beyond Neptune.



PLANET NINE

NEPTUNE

URANUS

SATURN

JUPITER

MARS

EARTH

VENUS

MERCURY

SUN